The Canadian Builder and Carpenter

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a trial. We know that we can be of a lot of value to you—just as you will be a lot of value to us.

If you are a builder write today and see what we have to offer.

We have just issued a little booklet which gives some interesting facts about roofing materials and the history of our shingle. It also tells a few other things which might be interesting to you. Just drop us a card today and ask for it. It is free.

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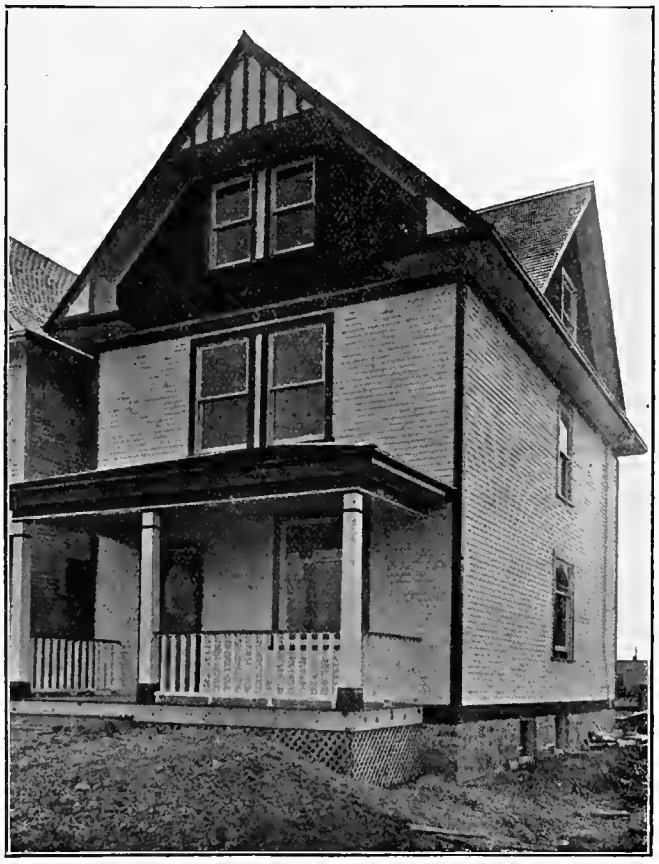
The Metal Shingle & Siding Co.

Preston, Ont. and Montreal, Que.



Plans and Bills of Material and Labor for a 14-Room Frame House, Winnipeg*

To Cost $3,200

By J. A. Gibson

Architect:
Hugh G. Holman, Winnipeg

Builder:
T. J. Graham, Winnipeg

The specifications show the cost of this house to be $3,283.00—inclusive of a number of items which might be classed under the heading of furnishings. The house has fourteen rooms, as is shown in the plans, including the pantry, bathroom and toilet. As well, the house has unusually liberal hall and closet space.

In Western Canada cities at the present time there is a big demand for houses of this type, to be used as boarding or rooming houses; and for that reason these plans should be of special value to the speculative builder, as a house of this type can be sold quickly. This house was sold long before it was completed. A study of the plans will show the many features that make the house a particularly convenient and comfortable one for rooming purposes.

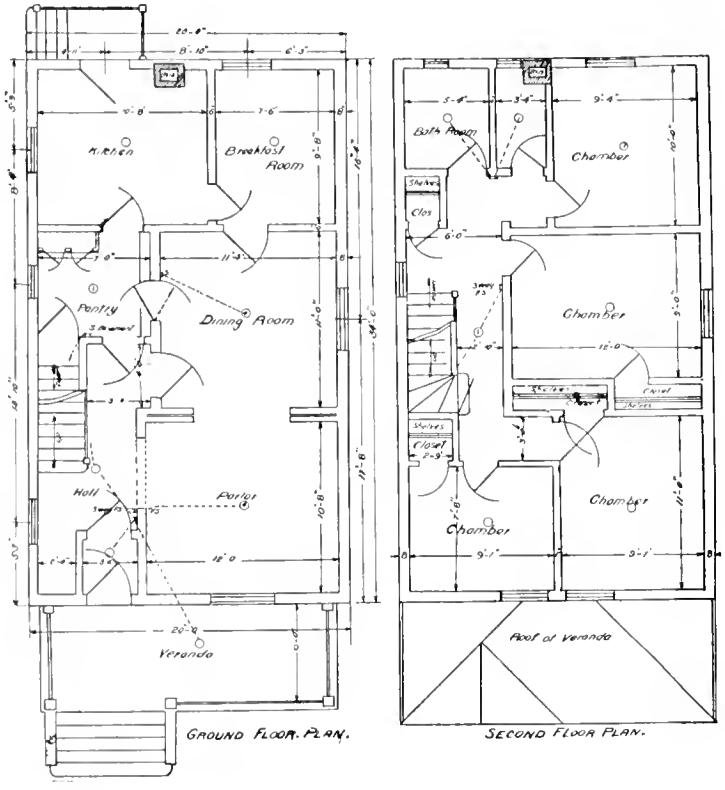
The house is heated with hot air furnace, and is lighted with electric light. The interior woodwork finish is fir; and the flooring is matched fir. The outside dimensions are 20 feet by 34 feet deep.

Specifications for Materials and Labor.

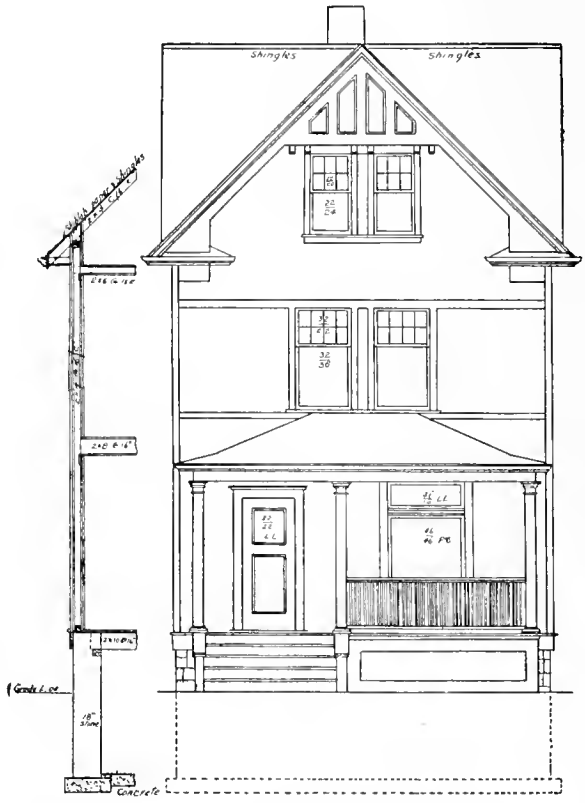
	Winnipeg prices.
½ bbl. plaster of Paris	$ 8.00
50 sacks Hardwall plaster, at $12.50 per ton	25.00
Stone, 11½ cords, at $13.00 per cord	149.50
Cement, 25 bags, at 90c.	22.50
Sand, 8 yds., at $1.75 per cubic yd.	14.00
Lime, 100 bushels, at 32c. per bushel	32.00
Gravel, 6 yds., at $1.85 per yard	11.10
Scantling, 2x4, 2,400 ft., at $31.00 per M	74.70
Flooring, fir, 1,912 ft., at $40.00 per M	76.50
Ceiling, grooved fir, for verandah	15.00
Siding, No. 1 spruce, B.C., 2,500 ft., at $50.00 per M.	125.00
Lining shiplap, roof, etc., 1,368 ft., at $30.00 per M.	410.40
Laths, No. 1, 1,400 ft., at $5.75	80.50
Shingles, No. 1 B.C., 14,000 at $4.00 per M.	56.00
Casings, No. 1 fir, 780 ft. at $60.00	46.80
Beams, 2x8, 1,722 ft. at $34.00 M	58.55
Doors, 20x68, fir, $3.10 each	80.60
Outside doors, oak	18.00
Moulding, 500 ft. at $2.50	12.00
Windows, 24	100.00
Locks	20.00
Inside casings and mouldings, 600 ft. at $50.00	30.00
Plumbing and bath, complete	190.00
Furnace and tinsmithing	210.00
Finishing edge flooring, 1¼x8, fir	234.20
Painting white and green	125.00
Excavating and leveling	75.00
Electric wiring, complete	36.50
Stair posts and rail	20.00
Carpenters' labor	500.00
Stonemasons' labor	92.00
Plans	50.00
Shingle stain	15.00
Stain and varnishing	75.00
Burlaping bathroom, dining room and halls	10.00
Finishing labor	175.00
Paper for den	10.00
	$3,283.95

EDITOR'S NOTE.—The writer is indebted to the builder, Mr. T. J. Graham, for the plans and bill of materials of this house. The house is one that will be of particular interest to the Western Canada builder who builds on speculation, since it is specially suitable for a rooming or boarding house, for which there is a big demand in Western cities.

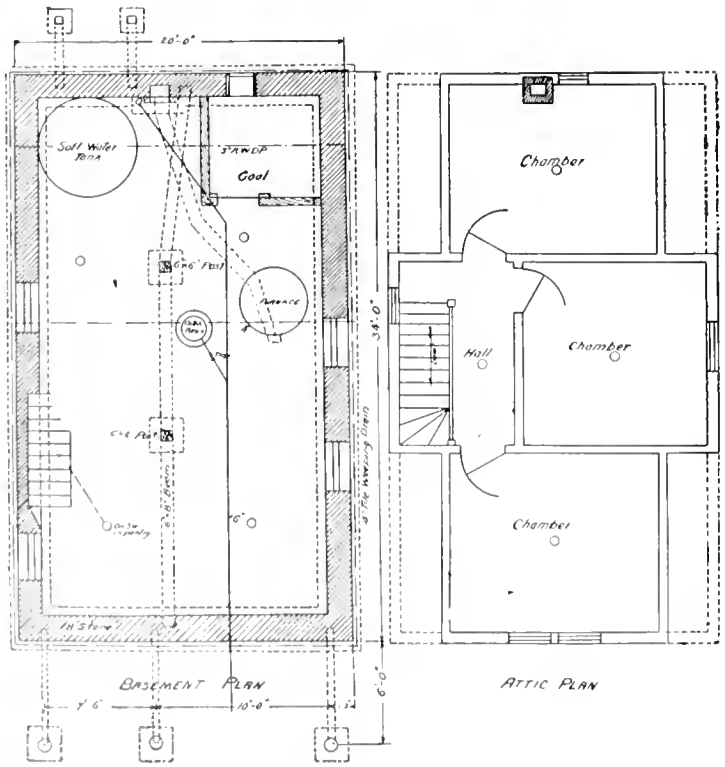
A 14-Room Frame House, Winnipeg, Erected by T. J. Graham, to Cost $3,200.



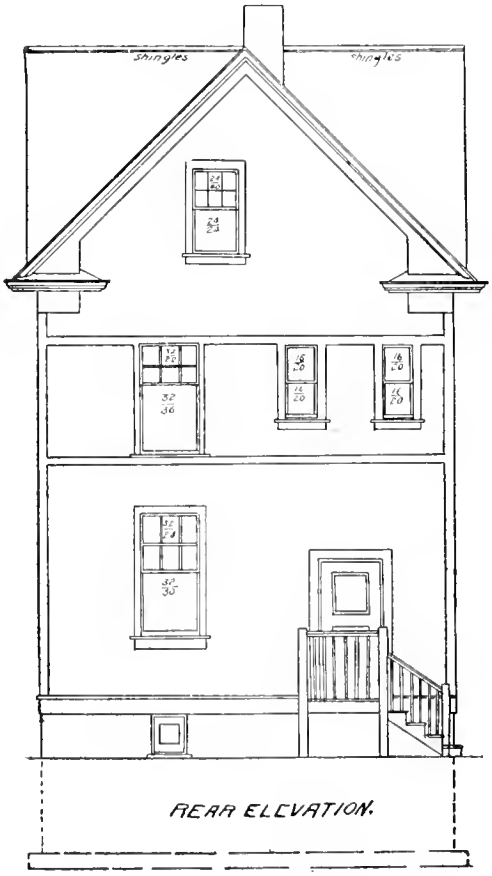
GROUND FLOOR PLAN. SECOND FLOOR PLAN.



FRONT ELEVATION



BASEMENT PLAN ATTIC PLAN



REAR ELEVATION.

The "Disappearing" Kitchen

In one of its monthly reports the California State Board of Health comments as follows upon what has come to be termed the "disappearing kitchen":

One of the problems of modern city growth is the condensation of the large, comfortable, family country homes of our forefathers into homes 10 ft. x 12 ft. x 50 ft, piled eight, ten or more high and flanked on either side by similarly condensed homes. These houses can have light only from windows in the front and back sides, and occasionally the diffused light from an air shaft. The only front yard is the fire escape; the only back yard is a narrow porch, and the limited air space made usable by an aerial clothes line. Under these conditions it is to be expected that disappearing beds, gas mantels and other similar devices for economizing space will be popular. To meet this demand has come what might be termed the disappearing kitchen. Just as the spacious, well ventilated old bedroom, with its wide-chimneyed fireplace, has been superseded by the small, illy-ventilated room which serves in the added capacity of sitting-room by day, so the great, open, cheerful kitchens of old are being superseded by the twentieth century kitchenette. Limited facilities for cooking and serving meals mean limited range of foods which may be considered for the table. Through invention and clever application of the scientific principles of food preservation this limit has been gradually extended until the tin-can dietary may be made to cover nearly all the ordinary demands for proper food, but the cook must know her trade or the family will severely suffer. It is probable that the "disappearing" kitchen plays a large part in the present-day prevalence of many diseases and functional disorders, especially of the alimentary canal.

Rate of Wages in Saskatchewan

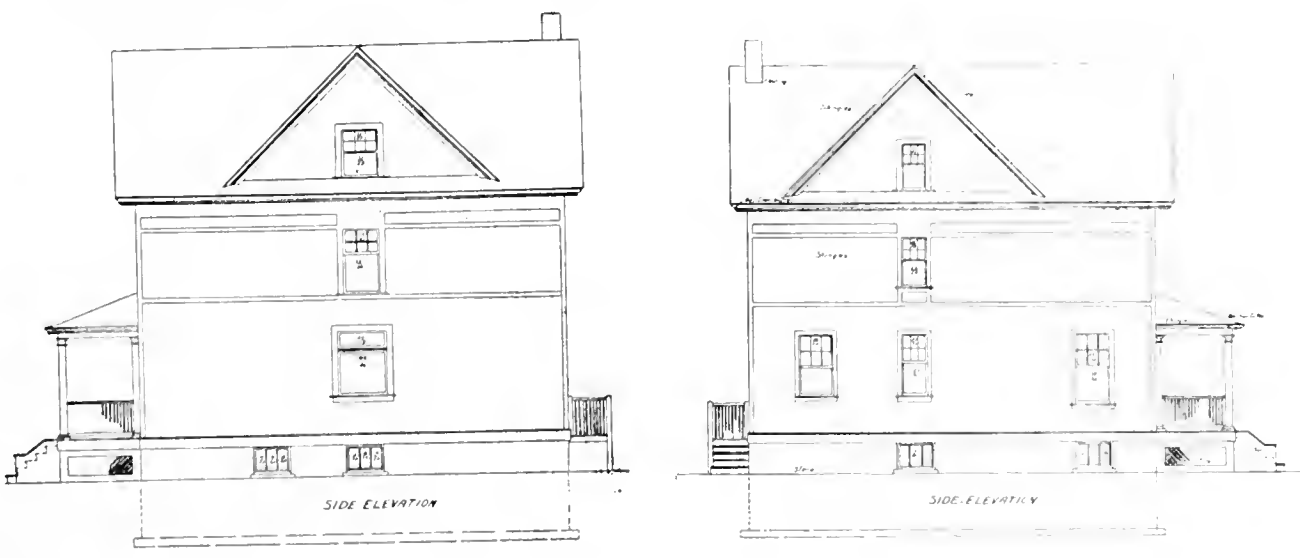
The following rates of maximum wages per hour are being paid in Saskatchewan, as agreed by the Builders' Exchanges of Regina, Saskatoon, Moose Jaw and Prince Albert:—bricklayers, 67½ cents; stonemasons, 67½ cents; stonecutters, 65 cents; plasterers, 60 cents; carpenters, 45 cents; electrical workers, 45 cents; painters, 40 cents; factory hands, 40 cents; paper hangers, 42½ cents; plumber steamfitters, 60 cents. First-class labor is very scarce, particularly carpenters. Many workmen are reported to be coming in from the United States.

Suggestions for the Progressive Builder

It goes without saying that the builder who desires to make a success in his chosen calling must be wide awake and keenly alive to all that is likely to serve in accomplishing his purpose. While no cast-iron rules can be laid down, there are many suggestions of which the ambitious builder can avail himself. In the first place it is an excellent idea for him to read the trade papers in his line so that he may keep posted as to what is being done by others and what new things are offering in the way of tools and appliances. When opportunity offers it is a good idea to go round a little and see what other builders are doing, for it often happens that in this way occasional hints and suggestions may be absorbed that will later prove useful.

Again, he should send for catalogues and descriptive matter concerning everything in the way of tools and appliances that are likely to be of interest or value to him in connection with the building business. He should study the literature carefully and then file it away for future reference. The builder would also do well to watch the business world around him for suggestions that may be useful in his own work. Now and then from an entirely different line of trade he may be able to obtain an idea that he can advantageously apply in his own work. He should cultivate the initiative; be inventive; strive to develop new ideas in design; new methods of performing work, and new tools and appliances with which to accomplish it. This not only keeps the initiative spirit alive and growing, but develops an individuality that leads to favorable comment and keeps the builder's name and work prominently before the public. Do not be afraid to try experiments, nor to experiment with new ideas. It is better to try a dozen new ideas that are failures than to allow one good one to escape for fear of making mistakes. Every new idea that looks good is worth investigating, and the best way to investigate a new idea is to try it out and determine its merits or demerits as the case may be.—The Building Age.

A 14-Room Frame House, Winnipeg, Erected by T. J. Graham, to Cost $3,200



True Stories of the Success of Two Building Contractors :

By E. Sprigg and W. B. Hubbard

One tells of the principles which he worked by, and which he gives as the fundamentol reasons for his success. The other tells how he started into the building and contracting business for himself from working as a carpenter and millwright. Both stories are particularly interesting, and should be an inspiration to the young builder and to the carpenter who will same day be in business for himself.

These are two stories awarded first prize in a competition by The American Carpenter & Builder and published in the July issue of that paper.

From Carpenter to General Builder—How I Made the Jump

By Edw. Sprigg

Having served three years at my trade as a carpenter, five years as a floor mill millwright and machine wood-worker, I made up my mind that I could do business on my own hook. I first started by doing small repair jobs, reshingling roofs, building porches, and small house additions. On this kind of work (which I did at the regular price charged by the local contractor for my own wage, and furnished a man at a profit of 25c. per day and a small per cent. on some materials furnished) I worked along for a year, and then took a contract to build an ordinary eight-room house, furnishing all the materials and labor.

I had always kept track of the cost of the labor and materials for making frames and placing materials, noting the time that it took me to do all these things. I based my estimate for the house contract on this knowledge; and on this contract I made wages for myself and a small profit. By keeping careful account of the cost of all labor and material, and comparing the cost of each item with my estimate of same, I was able to tell where some were high and some low.

Using this knowledge and past experience, I then began to go out after business, and the next five years were very busy ones, working with my men days, while figuring plans and buying materials and keeping books nights kept me out of mischief often as late as till two o'clock in the morning.

Many of the jobs done during these years were from plans and specifications made by myself, from the knowledge gained at a Y.M.C.A. night school; and all the details worked out as the work progressed.

A trade journal coming regularly to my desk brought me much useful information, and helped me to establish a reputation as a builder who kept up to date. And let me add right here that the young man who does not take a trade journal to keep himself in touch with his business will always be a back number.

My satisfied customers were my best advertisement; and the local architects began to send me their plans for estimates. I built from some of them, but was always careful not to load up too heavy, believing that it was better to have a small business well managed than a large one half-done. Then, as my capital was limited and I had a horror of debt, I felt that it was better to work within my means. I have seen several firms fail because they tried to do more business than they had capital for.

After following the business as a contractor for several years, I began in a small way to handle building material, nails, hardware, building paper, and small quantities of lumber, the latter being purchased from small saw mills and farmers who have a few thousand feet at a time. I would have this lumber planed at the local shops and store it in a small shop, 16 by 26 feet, two stories high, at the rear of my house.

I purchased at this time a hand power, self-feed rip saw; and with a good miter box and this saw and good tools we made all our frames and light mill work at a fair profit.

With increasing business came a demand for more room, and at this period I purchased two lots, two blocks from my house, making a plot of ground 80 by 150, which 5 fenced, and bought a small two-story shop and moved it on these lots; built a small lumber shed; bought a horse and small lumber wagon; and then began to deal in building material, especially lumber, and did a larger contracting business.

One trouble that I always had was to get materials from the local planing mills worked and delivered to our jobs to keep my men working to the best advantage; and I felt that if I had a small mill I could solve this problem.

I studied the matter carefully for several years, and finally made a deal for a planer, saw, small jointer, scroll saw, lathe, emery wheel, sand paper drum, and a quantity of pulleys, shafting, belting., etc. These machines were in fair condition, and by adding to my small two-story shop some sheds, in which I placed these machines and then bought a new 10 H.P. gasoline engine, I was equipped to do a vast amount of our mill work in our own shop. By using local lumber, which I bought at low prices from farmers, I was able to sort and get good grades of lumber for my frames and trim at small cost.

Being near to three factories, I readily secured their odd work and was able to keep going through the winter months.

Four years after installing engines and machines, I had bought more ground, and built a larger mill with machines for making all kinds of wood work; had installed a steam plant, dry kilns, and erected sheds for storing 50,000 feet of lumber; and with benen shop, stock rooms, office, etc., and a good force of men was doing a business of building and building materials, of $40,000.00 per year.

Considering the fact that I had started to learn my trade 22 years before, and that all my earthly possessions consisted of a suit of clothes and $15.00 worth of tools, and now owned my home, an 8 room house with all modern improvements, my lumber yards 120 by 200 with mill and equipment all complete, with nearly $6,000.00 in stock and tools, I could not think that my effort had been a failure.

I had now reached the age of 44 when a committee from Cornell University came after me to take the position of Supt. of Buildings. After considering the matter for some time, I finally decided to accept and

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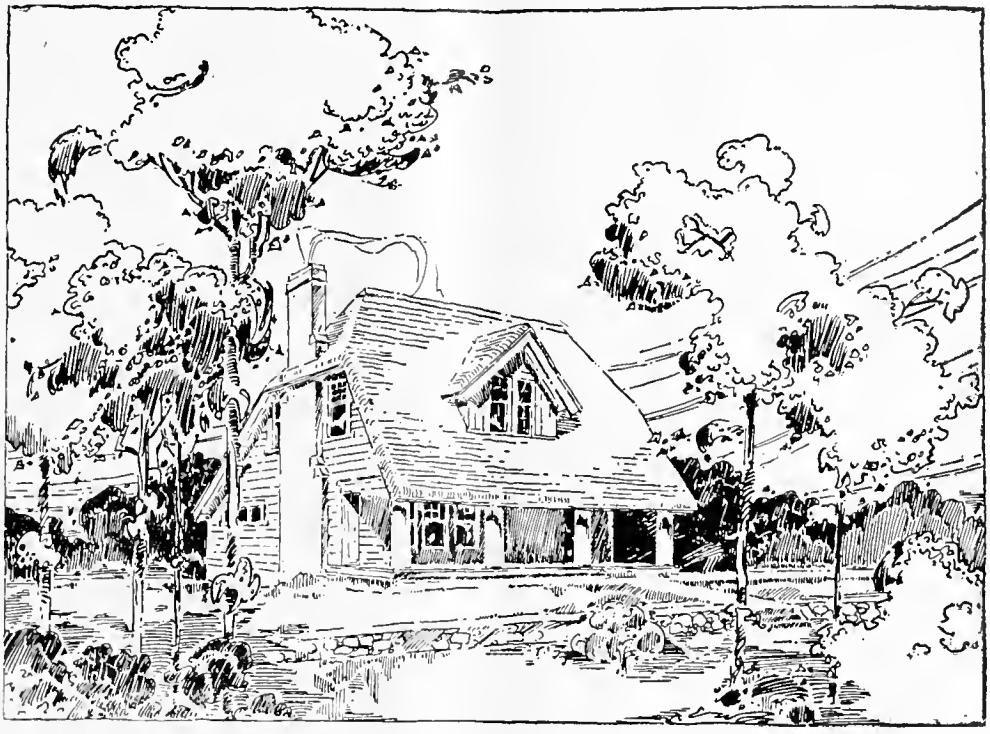
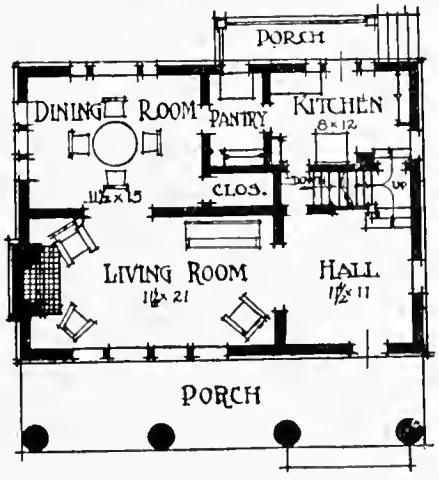


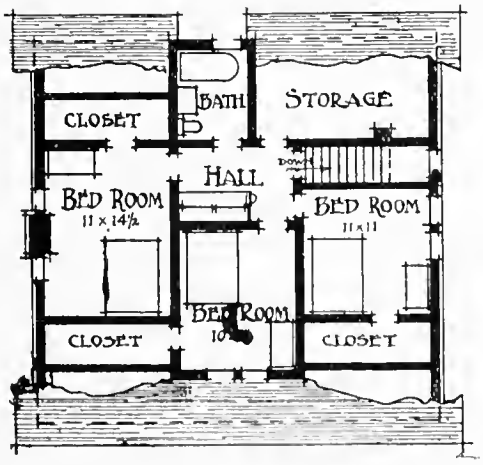
A Cottage that Makes One Think of Ireland : : : :

Architect, J. H. Hewson

This Irish cottage, illustrated in Keith's Magazine, with stained shingle roof, rounded eaves, giving a thatched effect and wide clapboards or shingles over ordinary balloon frame, recalls pleasant memories of the "ould counthry" and is eminently practical as an American home. The chimney is brick or can be plastered if desired and porch floor is cement, laid off in large squares.

The ground floor arrangement is simple and convenient, with combination stairs and access to basement from hall and kitchen. The large closet off the dining-room can open off the rear hall if desired. The basement, 24x34 feet is built under entire house. Three bedrooms, bathroom and large storage space on second floor complete the plan. The cost is estimated by the architect at $3,200.





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so closed out my business, leased the mill property, and am now using the knowledge I have gained by careful reading and observation.

How I Built up a Reputation That is Now Worth Money to Me as a Builder

By W. B. Hubbard

Usually a contractor's reputation is of his own construction, or "as he sows so shall he reap." A satisfied customer will do more to make a man's reputation good than any other thing I know of.

After signing contracts with a party to build a house, first having given himself and his family about what they wanted when I drew the plans (unless they were furnished by an architect), I try—and generally succeed—to get the building started as soon as possible, and then keep it moving along all the time. Never allow the owner to think he is being slighted, or is being neglected to do some one else's work.

I also consult frequently with the owner or his wife about materials, arrangements, etc. — which makes them feel more as if they would get just what they wanted. I also construct a building just as the plans and specifications call for; never under any circumstances do I deviate from them to the detriment of the owner or the building. In fact, I always try to do a little more than I agree to, and thereby gain a booster for myself.

Neither do I try to substitute poorer, cheap material where it should be No. 1; for it sooner or later loses its shape or brilliancy, "and then what?" Why, it is not "a thing of beauty," nor will it "be a joy forever."

If the owner has some little changes he wishes to make, and it makes no material difference to me, I accede to his wishes. I always try to make the owner feel at all times that he is getting just what he wants.

I also find that, by finding out before starting any building, if the owner has the necessary money to meet his obligations, I avoid a great deal of trouble when the time comes for a payment or final settlement.

The prompt payment of material bills, labor, etc., is the biggest asset one can have, aside from a thorough knowledge of building.

To know how the building will look when complete is very essential, and this is where a great many contractors fail; they seem to be unable to combine, substantiality, appearance, comfort, and other points that go to make the owner happy and content after he is given possession. I study all these points carefully.

First, I like to look at the ground on which building is to be erected. Oftentimes their choice of building is wholly unsuited to the surroundings. This may appear of no consequence, but I have found it different: because if, after completion, some neighbor tells the owner his house is out of place or does not fit, it sets him to thinking. Now, it is always the satisfied customer I am after.

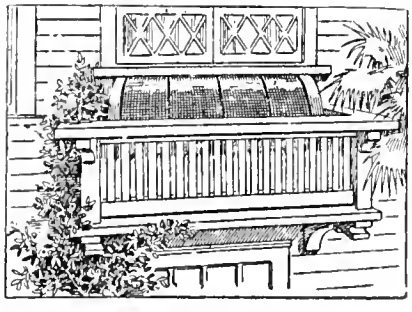
I also try to keep myself fairly well posted on all the topics of the day, politics included, so that I may be able to converse with those with whom I come in contact. I am never too busy to answer any question the owner may ask, or to listen to a suggestion.

I also try to keep in touch with all new appliances, materials, etc., as they come out, that I may be able to give people just what they want.

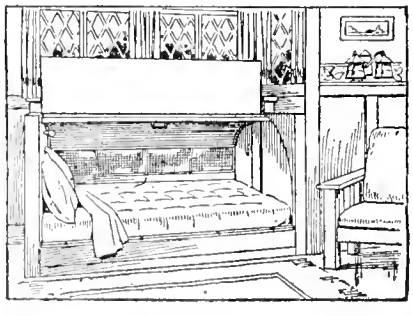
Honesty is always the "watchword." I have built a great many bungalows, ranging in price from $500.00 up (bungalows are my specialty and I adhere strictly to this line); the owner of every one is a booster for me. And I will say that I can trace my reputation in this city of 15,000 population to the fact that I treat my customers honestly, giving them what they wanted and making them feel satisfied.

A Novel Scheme for Outdoor Sleeping Porch

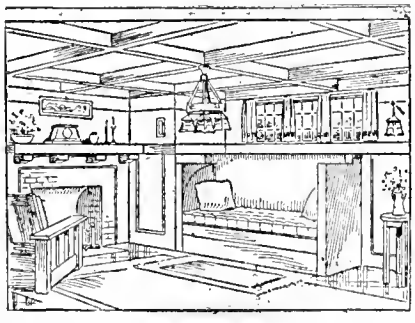
Beginning with the bungalow, southern California home builders have become noted for the innovations they have made in dwelling-house architecture and built-in interior effects. The very latest of the latter is a bed which, at the will of the occupant, may be either in the room or outside in the open air, yet, paradoxical as it may seem, remain in the same place. This is accomplished by building the bed inclosure in the outer wall of the house or apartment, the inclosure, when the bed is closed, appearing as a davenport, inside the room, and from the exterior as a balcony. The inclosure projects outside, from 30 to 36 inches from the wall.



The bed inclosure, appearing from the exterior as a balcony.



The movable half-dome, which may be lowered over the outer side of the bed, or over the inner side, the latter arrangement placing the sleeper entirely outside the room. The appearance inside is that of a davenport.



Over the bed is a movable half-dome which may be lowered either over the outside end of the bed, effectually shutting off the outer air, rain or dust; or over the inside part, thus placing the sleeper entirely outside the room in the open air. From a hygienic standpoint, this new bed far surpasses the outdoor sleeping-porch bed, for the reason that when retiring to his sleeping chamber the occupant takes with him a volume of warm air from the room and thus experiences a gradual change of temperature, instead of the sudden transition from a warm room to a cold porch. In case of storm the dome can be swung over completely to shut out the rain.

Another advantage of this bed is the saving in space, for the inside projection is utilized as a davenport and, as compared with the sleeping porch, there is a large saving in space outside. The bed may be either installed in a house already completed, or built in while it is being erected.

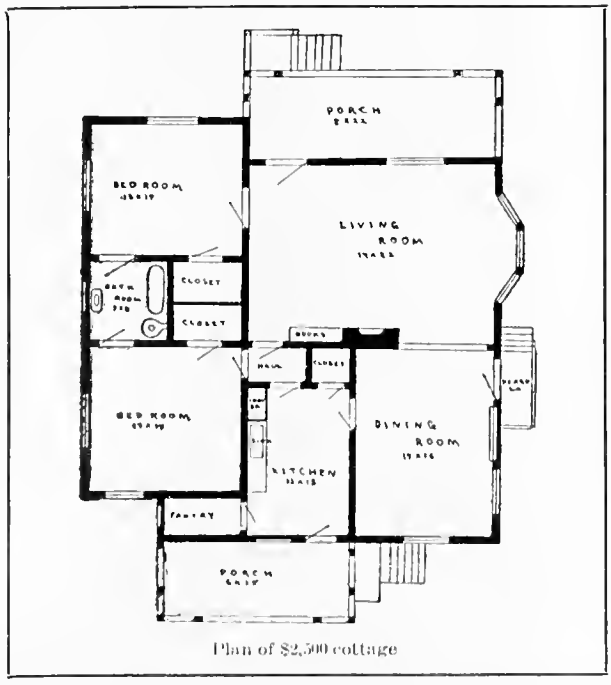
This house was built and furnished for $3,000.

Cottage of Attractive Design Built for $2,500

The low price, yet attractive, convenient and comfortable cottage shown in the accompanying illustrations, is one of a series of inexpensive houses that Keiths' Magazine are illustrating at the present time.

This house is but one story in height, but contains living room, dining room, kitchen, bathroom and two sleeping rooms. The house complete, including all stationary fixtures, costs exactly $2,500.

The home presents a very attractive appearance to the passer-by. It is of the "California cottage" type,



Plan of $2,500 cottage

but is not closely akin to the bungalow. It possesses a front and rear porch and a miniature pergola on the side. It is built throughout of Oregon pine. The exterior in harmony, the woodwork being stained to resemble weathered oak, while the plastered spaces are tinted dark green. The ceilings of both rooms are beamed, and the floors are finished to resemble hardwood. The walls of the dining room are paneled to a height of 5 feet, and a plate rack, heavily bracketed, extends around the room at this elevation. The dining room possesses an excellent large buffet, built in, which is finished and colored to correspond with the balance of the woodwork. The rooms are heated from a fireplace. This fireplace is broad, low and deep, with a plain, neat mantel built of cream brick.

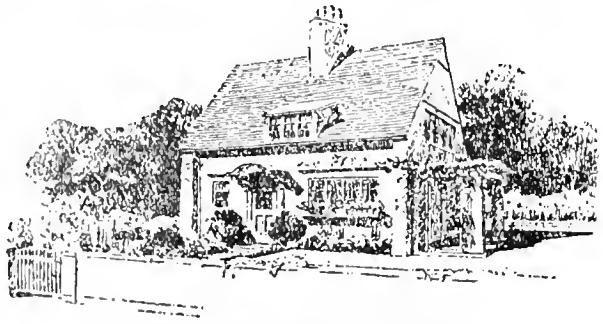
The front bedroom is 13 x 14 feet and the back one is 14 x 14 feet. The former is given a color scheme of pale green, and the latter is finished in pale blues. Each has two windows. The bathroom is located between the two rooms, with a door leading into each. The room is 7 x 8 feet, and to fill out the remaining 7 feet between the two sleeping rooms there are two 4 x 7 foot closets.

The kitchen, which is located so as to have its door open into the rear porch, is 11 x 13 feet. Its color scheme is buff. It is provided with cupboards, coolers and a sink, and has gas connections for the kitchen stove. The house is lighted throughout by both gas and electricity.

Great Demand for Cement in Australia

Although there are extensive cement deposits in different parts of Australia, and the local industry is well protected by a tariff of 24 cents per 112 pounds, the demand is so great that the users of cement have recently been obliged to make extensive imports from other countries, chiefly from Germany. The local Government, however, show a marked disposition to use Australian cement, and this, added to the generally increasing demand, should give a strong impetus to the cement industry in the island continent.

Not only is cement being extensively used for large engineering projects, such as the Wallarobba Tunnel in New South Wales and the great irrigation works under construction, but it is rapidly becoming more popular for ordinary building purposes, partly through the advancing price of lumber and partly through the growing popular knowledge of its advantages.



Front of House Costing $2,500

Another Prize Inexpensive Cottage

Cost $2,500

Plans by C. Mink and L. A. Carson

In the last issue of The Canadian Builder, were reproduced plans and elevation of a house that were given first prize in the architectural competition of the Building Trades Employees' Association, New York, for $2,500 houses. Accompanying are plans, elevation and list of materials and costs of the house that was awarded second prize. The plans are by C. Mink and L. A. Carson, and call for an outlay of $2,500, exclusive of plumbing fixtures and heating plant. These are extra.

The specifications are as follows:

Excavating and grading—Excavate under house proper to a depth of 7 feet, 6 inches, and to sufficient depth to lay side porch floor. All necessary grading to finish grade lines to be done at completion of work.

Mason work.—Foundation walls, 12 inch terra cotta blocks; provide all necessary footings, and 8 inch terra cotta walls for cellar window areas. Exterior walls, above grade 8 inch terra cotta blocks, with stucco finish. Cellar floor, 4 inches of concrete, with half inch finishing coat of cement mortar. Side porch floor, selected red tile, 6 x 9 inches, with cement, mortar joints. Chimney, common sound, hard burned brick, with stucco finish on exterior parts. All flues to have fireclay flue lining, and living room fireplaces faced with selected hard brick, and lined with firebrick.

Carpentry work.—Rough framing. Floor joints, 2 x 10 inches, hemlock 16 inches on centers. Rafters, 2 x 6 inches, hemlock. Studs, 2 x 4 inches, hemlock.

Floors: All sub-flooring common pine. Finished floor in first story, oak. Finished floor in second story, yellow pine. Doors and trim, cypress. Sash, white pine. Roof, laid with clear, white cedar shingles, 8 inches to weather.

Plastering—All interior walls and ceilings lathed and plastered. Three coat work.

Painting and glazing—Exterior trim, painted white, three coat work. Interior trim, stained, selected color. Sash, painted white. Floors stained. Shingles, dark green stain. Sheet metal work, painted two coats. Glass to be D.S.A.

Hardware—Hardware substantial stock design, and of good quality.

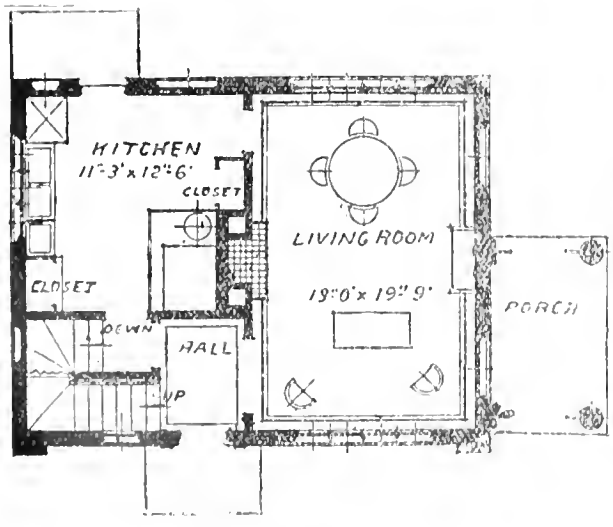
Story Heights—Clear story heights, cellar, 7 feet, 6 inches; first story, 9 feet; second story, 8 feet.

Bill of Materials and Costs.

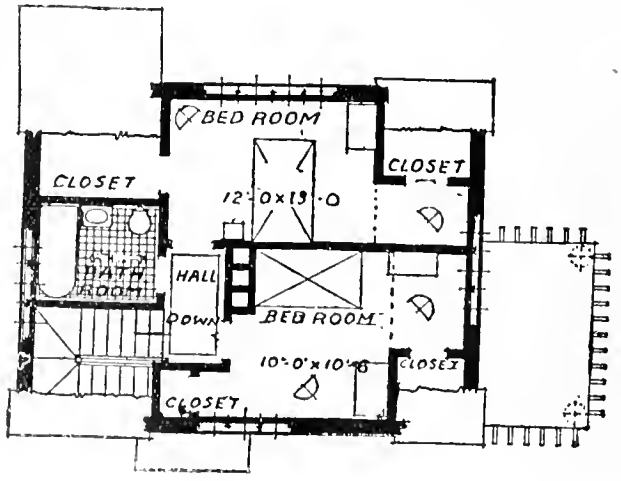
Costs in this building are estimated by the architects and checked up by the committee of awards as follows:

Excavation and grading	$ 50
Masonry, terra cotta, tile brick work and plastering complete	1,790
Carpentry work, including all trim, and shingle roof, complete	500
Hardware	35
Painting and glazing	100
Tin work	25
Total	$2,500

Area covered by house proper .....602 sq. ft.
Cubical contents .....15,650 cu. ft.



First Floor Plan.



Second Floor Plan.

Fire Prevention in Cities

In a recent address dealing with methods for combating the stupendous waste due to fire, Franklin H. Wentworth, secretary of the National Fire Protection Association, offered some excellent suggestions regarding a solution of the conflagration problem. Some extracts from his address are as follows:

There is one way to solve this conflagration problem —not absolutely, but at least relatively. In the heart of nearly every city there are streets crossing at right angles, along which for a very considerable distance are buildings of brick, stone and concrete. Looked at upon the map this shows a more or less complete Maltese cross of buildings which are not wooden, and which operate to divide the wooden-built district into quarter sections, and which might hold a fire in any one of these sections if they were equipped to do so. These brick and stone buildings are ordinarily valueless as fire-stops because their windows are of thin glass and their window frames of wood. The small city that will trace out its Maltese cross of such buildings and equip them with metal window frames and wired glass will immediately possess the equivalent of substantial fire walls crossing at right angles in its center, dividing it into four sections. By such a simple, inexpensive, but yet strategic procedure many a city may save itself from the destruction which now awaits only the right kind of a fire on the right kind of a night.

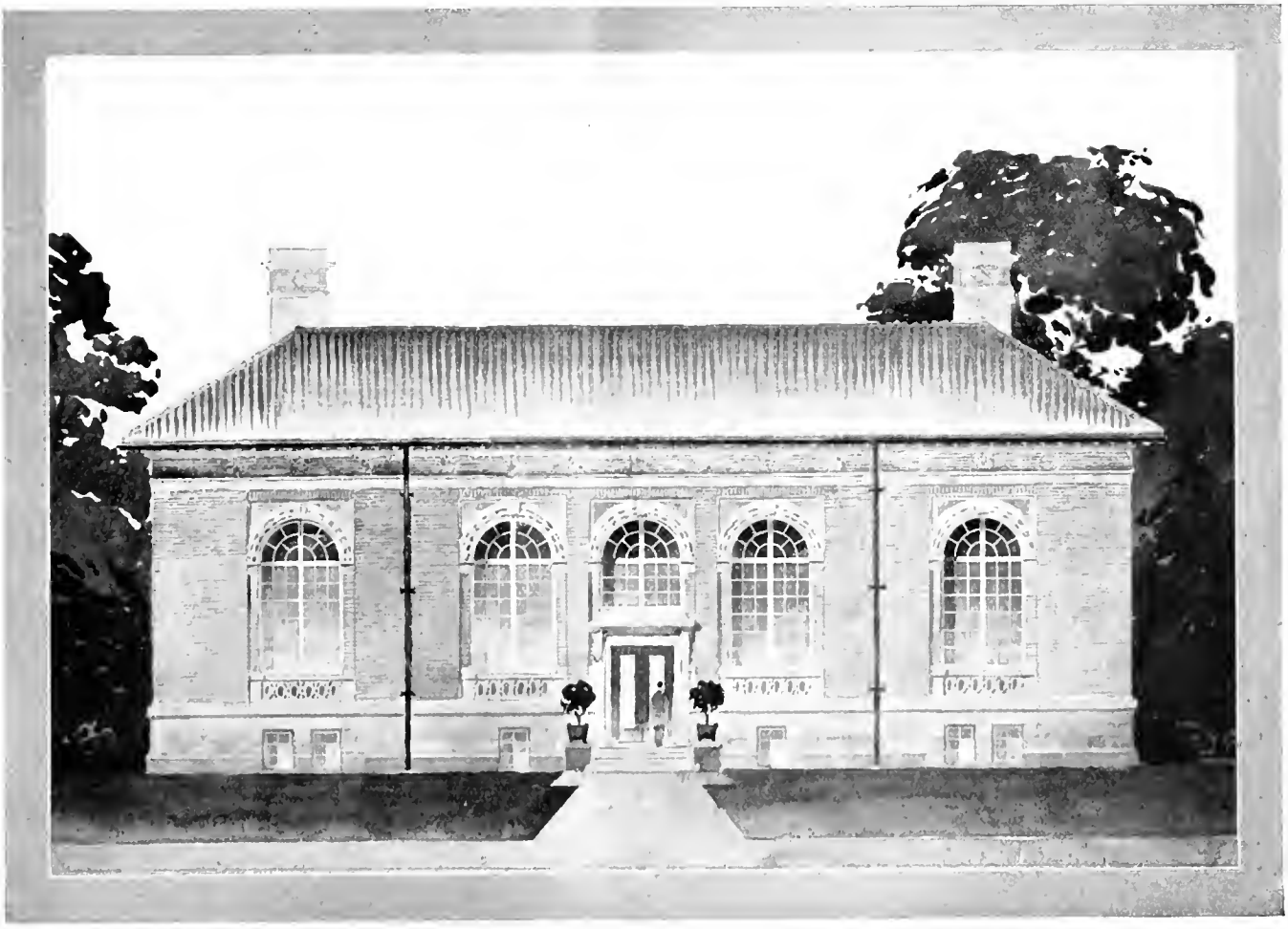
Having thus fortified city buildings one against the other, extensive fires within individual structures can be prevented by the use of the now well established automatic sprinkler system. With our window openings protected and our buildings equipped with such extinguishers, the conflagration hazard in mercantile districts will be eliminated. There will then remain for consideration our immense residence districts constructed almost wholly of wood surrounding the mercantile centers, like fagots around a funeral pyre. We can lessen the loss here by the abolition of the use of wooden shingles. Burning shingles can be carried great distances by the wind or draft of a conflagration, and when they alight in their turn upon other dry shingles they make fearful havoc. It will not be necessary to remove all shingle roofs immediately. An effective city ordinance might require all roofs constructed in the future to be of incombustible material, and that all roofs which shall hereafter require repair to the extent of one-third of their area shall be replaced with incombustible roofs.

A Matter of Honesty

We have heard from several sources this season that contractors have been put to serious loss by brick makers.

The maker promised delivery of brick at a certain date. The contractor, depending on the promise, hired masons, etc., to be on the job at a certain date, only to find that brick had not been delivered. After waiting most of the morning the workmen went home. They, of course, insisted on pay for the time.

Not only did this cause the contractor loss, but it "put him in wrong" with his workmen. In times like the present every care should be taken to avoid making promises that may not be kept.



Toronto Public Library, Dovercourt Branch. Chapman & McGiffin, Toronto, Architects. Plastering, Hodge & Son.

Proposed New Civic Centre for Winnipeg

The Winnipeg Town Planning Commission appointed by the City Council has been working quietly for a year on the general outline of a scheme to bring the city into line with other great cities, and as the Commission has been fortunate in obtaining the co-operation of a large number of experts in the various phases of the work of town planning, its reports and recommendations should be of the greatest value to the city. Amongst those giving their services to the Commission will be found Canada's greatest experts on architecture, transport, engineering and social service.

As the Provincial Government is about to create a new and magnificent government centre, the commission felt this an opportune time to come forward with a scheme for making an architectural centre to the city. The government has been approached on the subject and the commission has been led to believe that they will give every facility for carrying out the scheme brought forward.

The proposal, as illustrated, is, of course, subject to many modifications, but the general scheme is to widen Vaughan, place the Parliament Buildings on its axis on the south end, the Law Courts, Land Titles offices and other fine buildings along the sides of the street, which is to be developed as a Mall, and to close the vista of the Mall at the north end by the new City Hall.

Objections have been raised to the scheme on several minor points, one of the chief being the introduction of the new Hudson's Bay store into the scheme. There is ample precedent for this, however, throughout the world, and there is no reason why the Hudson Bay building should not conform to the architectural scheme adopted for the Mall. Another objection is that the City Hall will not be in the centre of the business quarter. Those who are conversant with the growth of the city, will see that in a few years time the site selected will be in the centre, as instead of the retail business developing along Main Street beyond Portage on the south, and beyond the City Hall on the north, it is showing a marked tendency to develop westward along Portage. Those familiar with the trend of things predict that the chief retail streets will form a triangle along Portage, Sherbrooke and Notre Dame. Main Street will become wholly financial and commercial offices, while the land between Notre Dame, Sherbrooke and the C.P.R., owing to its excellent trackage facilities, will become a wholesale district, leading down to a fine commercial waterfront, treated in such a way as to make it not only useful, but beautiful.

Proposed New Civic Centre for Winnipeg.

Antwerp, Vienna, Paris and London, and other great river ports have given ample demonstration of the fact that a commercial waterfront can be made one of the most stately in a city—a front, where, from a pleasant boulevard, the public may watch the life and activity of water traffic. The Red is a beautiful river, and if the city takes it in hand, it will be one of the finest features of a fine city. A special committee of the commission is dealing with the problem of the river.

Hardwood Floors in Residences: Their Merits and How to Lay and Finish Them

By G. D. Crain, Jr.

THE increasing popularity of hardwood floors in residences has been one of the interesting developments of the past decade. Until a few years ago it was considered sufficient for the reception hall and parlor to be floored with hardwood, but the residence-owner of to-day usually demands that his entire house be treated in this manner.

The great beauty of hardwood flooring is one of the reasons for the favor accorded it, but the fact that it is more permanent, having little depreciation; that it enables the floors to be easily cleaned and thus are more sanitary, and finally, because a house with hardwood floors is more readily saleable than any other, the owner finds it advantageous to have them if they can possibly be afforded.

The fact that hardwood floors are an asset in favor of the sale of a house has caused many builders who make residences for immediate sale to put in hardwood floors, even if a sacrifice has to be made in some other part of the house. The real estate dealer who has homes for sale makes the fact that hardwood floors are to be found throughout prominent in his advertising.

There are, of course, hardwood floors and hardwood floors. The great demand for work of this kind has resulted in some rather hasty attempts to put jobs through, and now and then dissatisfaction has been the result. The work of putting down a hardwood floor is a task calling for competent labor, and even in the case of ordinary tongue-and-groove stock, which does not require the same expertness as that demanded of parquetry, the actual laying should not be relegated to the inexperienced workman.

Information of Value About Hardwood Floors.

Beginning at the beginning—the mill—hardwood flooring is made of white oak, red oak, maple and some other woods, though these are the leaders. Quartered oak, in view of its splendid figure, offers the greatest possibilities, and is consequently more popular than any other kind of flooring. Quartered red oak has a color that many people prize above that of white oak, and consequently much of it is put down. Maple has a fine, even grain light color, and is well adapted to flooring.

Inasmuch as flooring is comparatively thin, ranging from 5-16 to 13-16 inch in thickness, it is particularly susceptible to changes in the temperature and humidity. From the time that it is turned out of the mill until it is laid down, therefore, it should be carefully handled and exposed to as little variation in these conditions as possible. In fine work, such as parquetry jobs, many manufacturers of flooring make and ship the material just before it is to be used, in order not to allow the squares to have an opportunity to absorb moisture or otherwise deteriorate.

If the builder or hardwood flooring contractor carries much stock on hand, it should be kept in a compartment which is well closed and which, preferably, should be well heated. In this way there will be no chance for flooring which has been purchased at a stiff price to come out of the warerooms anything but fit for service. In the case of special designs, which have to be manufactured to specification, there is, of course, no occasion for the use of heated storage-rooms, since this work is put into the job as soon as it is received from the mill.

If the flooring is laid over a base of inferior wood, as is usually the case, it is absolutely essential that this be thoroughly dry. In order to insure the absence of moisture, it is desirable that the stock be kiln-dried, and before the flooring is laid down the contractor, if he has not had charge of putting in the sub-floor, should make sure of his ground in this respect. If this is not done, the chances are that the floor will prove defective, and in that case a lot of explanations which will not explain as far as the house owner is concerned, will be in order.

Ill Effects of Moist Underpinning.

Some time ago a flooring expert was called upon to lay down a large hardwood floor in what was to be the ballroom of a handsome residence in New York City. He made an examination of the sub-floor, and found that it contained excessive moisture, not having been thoroughly dried. He explained this to the owners of the property, and pointed out that in order to secure good results it would be necessary to heat the room and allow the floor to dry for several weeks. The owners did not believe this to be practicable, and therefore ordered the work to be done immediately. It was laid with the understanding that the contractor did not assume responsibility for its permanent stability.

The ill-effects of the moist underpinning were not evident immediately, but about six months after that they were easily apparent. The floor cracked in many places, and in some places sagged and in others buckled, reproducing the effect of the green flooring beneath. The surface, instead of being the beautiful, uniform expanse of brilliant hardwood that it was originally, was decidedly unattractive. The owner of the residence lost no time in informing the contractor that his prediction had come true, and authorized him to tear out the entire floor, sub-structure and all, and put in material that he could guarantee to do the work.

Similar trouble results when flooring is laid over concrete without proper protection. In a good many business buildings, even those which are comparatively small, it is getting to be customary to have the floors laid of some fireproof material, and this is frequently of cement construction. The concrete is, of course, put down wet, and while it sets after the crystallization process takes effect, it does not lose all of its moisture immediately, by any means. It is therefore evident that to put down a piece of thin hardwood flooring over this mass of moist stone, which is what the concrete really is, is to expose it to the most unfavorable conditions imaginable.

Getting Quick Results.

Sometimes an effort is made to get quick results by laying strips, upon which the hardwood floor is to rest, in the concrete at the time it sets. This is unsatisfactory, since the strips themselves will feel the effect of the moisture, and the flooring that is nailed down over them will ultimately get the benefit of it as well. It is the best, and in fact the only safe, plan, when concrete is used, to permit it to dry for several months before the flooring is laid. If this is impossible the concrete should be waterproofed, and several strips of waterproof paper laid between the concrete and the wood above. A substructure of pine or other less expensive

material should always be laid, so as to enable the surface structure to have a dry firm foundation.

Occasionally where a hurry-up job is being put through, the hardwood flooring men are told to get busy when the building is not completely enclosed. This is a most hazardous undertaking, and to lay flooring in cold weather with doors and windows still open is running a risk that a careful workman doesn't like to take. Most flooring contractors find it advantageous to have charcoal heaters put in and to warm the rooms in which flooring is to be put down with the idea of making assurance doubly sure. They arrange so that they are the last contractors in the building, and so that the structure can be closed as tight as the proverbial drum. In this way they eliminate practically every chance of faulty work, and insure satisfaction to the owner, to themselves and to the flooring manufacturer who turned out the material.

Make Use of a Sub-Floor.

Even when 13-16-in. stock is used in a residence where there is no concrete work, it is good policy to put the hardwood down over a sub-floor. It has gotten to be a common occurrence to see flooring of this type nailed down directly on the joists, without any supporting foundation. While this is not fatal in that it will cause the work to turn out badly, it is objectionable from other standpoints, and is not recommended. Greater permanence is assured by having a foundation structure, and as the cost of the latter is not great, this can usually be arranged for without increasing the expense of the floor to any considerable extent.

Finishing a hardwood floor, especially where there is a great deal of parquetry, is one of the hardest parts of the job. One reason for this is that practically all other interior trim comes to the carpenter finished and sandpapered and ready to be fixed in its place. Formerly nearly all of the cabinet work required scraping and finishing by the carpenter, but with the improvement in the methods of the manufacturers, all of this, with the exception of flooring, is not done at the mill. Owing to the fact that it is impossible to anticipate conditions under which the work is to be laid, it is best to have the flooring scraped after it is put down.

This puts it up to the carpenter to attend to that job, although, as one flooring expert said, there are a large number of otherwise excellent workmen who not only don't know how to scrape a hardwood floor, but don't know how to sharpen a scraper. Without attempting to go into details regarding this feature of the work, it may be stated that the floor should be scraped with the grain, and that uniformity in the finish is the attribute which must be secured.

While the work of the hardwood flooring man is complete, as far as his immediate responsibilities are concerned, after he has laid down the floor and scraped it until the proper finish has been secured, it is good policy to carry the work a bit further, so as to include instructions to the owner of the property, if he is to occupy it as a residence, or the tenant who comes after.

The care of hardwood floors is an art which many people know little about, but fortunately there is getting to be a rather extensive literature on the subject. The proper use of wax and varnish, and the treatment of the floors after the first coat has been applied, are all topics which can be legitimately dealt with by the flooring man, for by explaining to the "ultimate consumer" the various problems to be met with in the use of hardwood floors, better appreciation of the work done and greater insurance of permanent satisfaction are attained.—The Building Age.

Relative Cost of Frame Houses and Those Built of Brick, Stucco, Etc.

The report of the committee on fire protection of the Boston Chamber of Commerce included some very interesting figures on the comparative cost of frame and brick construction for dwelling houses. THE CONCLUSION WAS THAT THE SLIGHTLY GREATER COST OF BRICK, WHICH AVERAGED UNDER 10 PER CENT. MORE THAN FRAME, WAS MORE THAN OFFSET IN A FEW YEARS BY THE LESSER COST OF MAINTENANCE AND INSURANCE AND BY THE GREATER COMFORT AND DURABILITY OF THE STRUCTURE. The report says that when lumber was cheap and brick was more expensive than now, the idea became general that the cost of brick as compared with frame was almost prohibitive, and this continues, although the conditions have changed so radically that the cost is now little more and the ultimate cost is less.

The purpose of the investigation was to encourage the use of brick and non-combustible interior construction for the purposes of fire protection, and this form of building was very strongly urged by the report. Bona fide bids were secured from five different contractors of good reputation on the cost of the construction of dwellings of brick, wood, cement and hollow blocks, the houses to be the same in every particular except the outer walls. Bids were secured on a modern eight-room house, of good design and excellent arrangement, such as is frequently built in and about large cities, and on these the bids of the five contractors varied comparatively little, and so the average was taken as a fair test of the practical cost, the contractors including their profits in all cases. The average bid for the various types was as follows, the second column showing the percentage of excess cost of each type over the clapboard type:

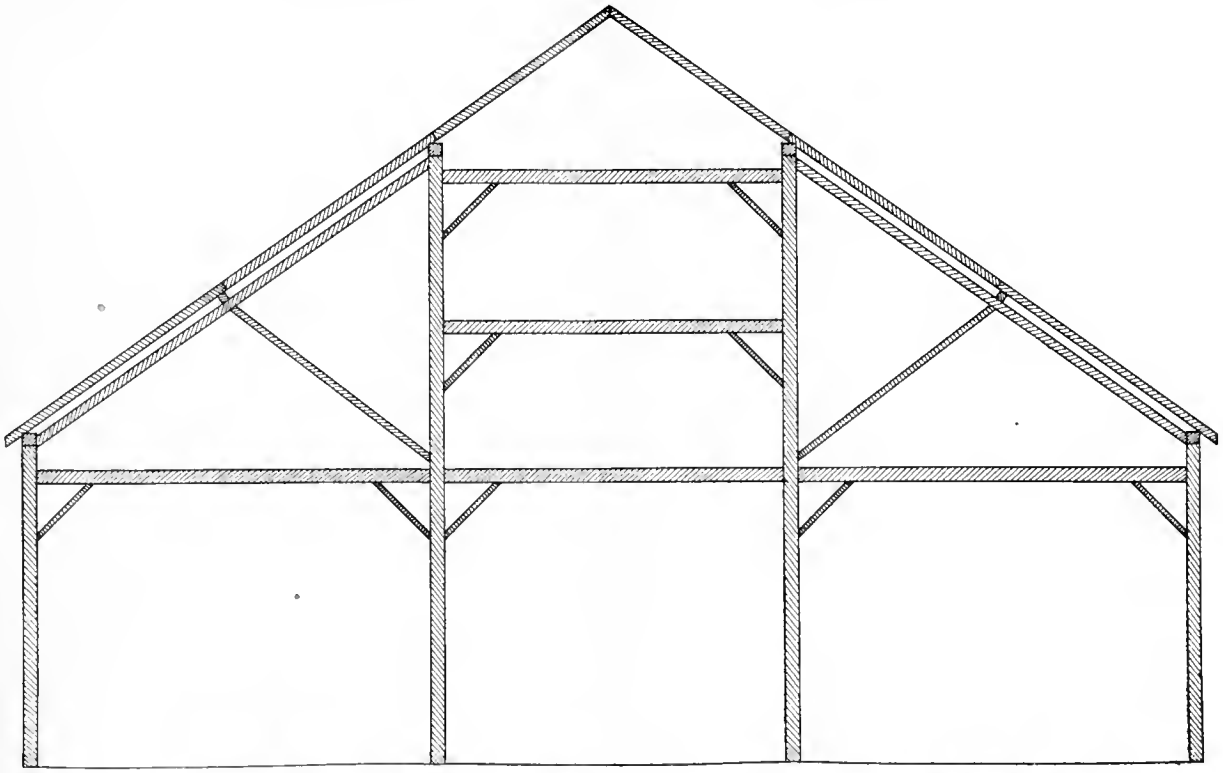
Clapboard	$6,759.95	.0
Shingle	6,868.80	1.6
10-inch bricks wall, hollow	7,372.48	9.1
12-inch brick wall, solid	7,641.00	13.0
Stucco on hollow block	7,187.65	6.3
Brick veneer on hollow block	7,483.16	10.7
Stucco on frame	6,952.90	2.9
Brick veneer on boarding	7,226.44	6.9
Brick veneer on studding	7,153.98	5.8

The committee corresponded with contractors in various parts of the country in making up its report, and found from them that brick buildings were commonly estimated to cost 10 per cent. more than frame, while brick veneered buildings could be put up in many sections for 5 per cent. more than the cost of frame buildings, the difference in cost being usually more than offset by the lessened insurance premium. In the same way estimates were secured on annual cost of maintenance, including depreciation, for frame and brick dwellings, and it was found that the frame dwellings cost 26 per cent. more for maintenance and depreciation than the brick dwellings.

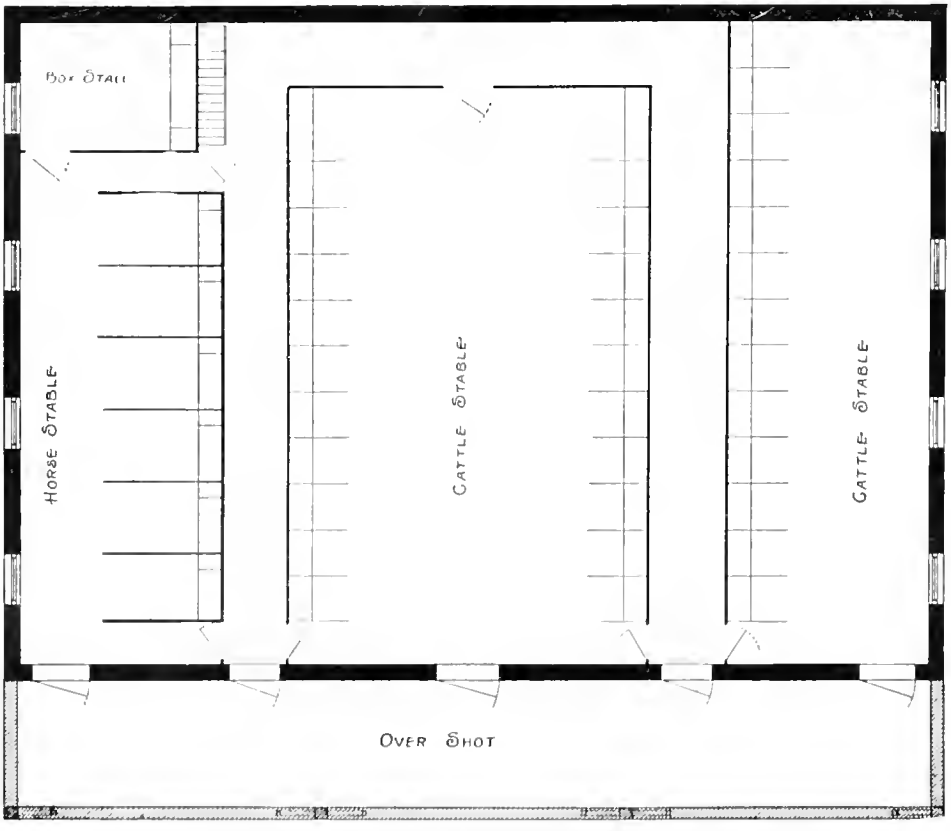
The best way to realize the full value of a good lace string is to need one badly some day when there is nothing of the kind to be had.

"Ability to handle men" is the most frequent, and often the most important, requirement by those seeking foremen. It evidently pays to learn how to handle men as well as to learn how to handle machines.

IDEAL BARN PLANS



64 ft. wide 18 ft. post



74 ft. long, 64 ft. wide

PLAN BY H. J. HAMACHER, NEW DUNDEE, ONT.

(Courtesy Metal Shingle and Siding Co., Limited, Preston, Ontario)

Correspondence and Discussions

Readers are invited to send replies to questions asked by readers of The Canadian Builder and these will be paid for at regular editorial rates. Anyone desiring the names of firms manufacturing certain lines will be answered in this department.

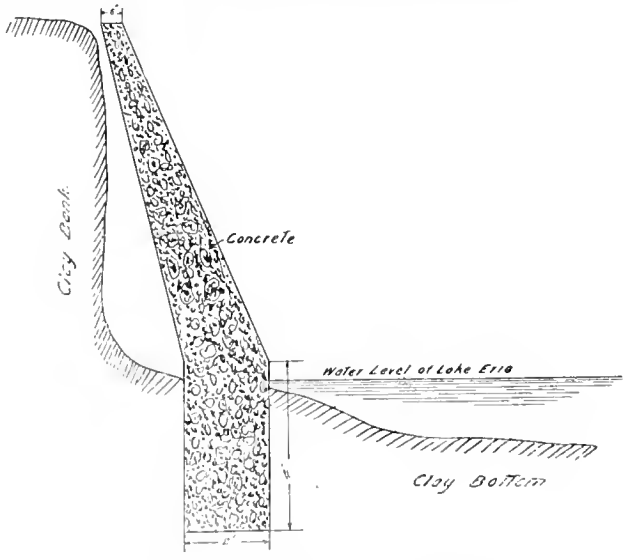
Comments on articles published in The Canadian Builder are welcomed and all letters containing good ideas will be paid for.—Editor.

Readers! How About This?

The Canadian Builder,
Toronto:—

Dear Sirs.—I enclose a sketch of which I would like some information if possible. You will note that it represents a bank, which is at our summer resort here, which keeps washing away. It has washed away about 12 feet in three months time, and what I want to know is, would it be feasible to put in such a wall as I have drawn it, would the sea, washing up on the wall and coming back, undermine it on the water side. Of course, the space behind the wall would be filled in solid with earth.

I also would like some information as to how, or best way, to form a beach along this bank. On both



Would it be feasible to put this wall along the bank?

sides of this place there has been formed a nice beach.

I would like you to give me some light on these at once, as we would like to start operations right away.

I have been receiving The Canadian Builder regularly, and I may say that I have found some very useful and interesting reading in the last couple of issues.

Yours very truly,
EDWIN KEYES,
General Contractor and Builder, Chatham, Ont.

The Proper Authority

"Consider the question of nails" demands a contemporary, which says "every conscientious builder wants to find out what 'better nails' are, and why, and how much they cost."

Very well, but why not consult a manicurist at once.

Personal and Trade News

Mr. William McCartney, a retired contractor, seventy-eight years of age, died at his home, city of Kingston, Ont., last week.

* * *

John Forbes, a well known building contractor of Brandon, Man., a resident in that city for the last thirty years, died last week.

* * *

The Toronto Board of Education have appointed Mr. F. E. Belfry architect and assistant superintendent of buildings at a commencing salary of $3,000 a year.

* * *

Mr. Thomas Halley, architect, was found drowned at Weyburn, Sask., last week. The late Mr. Halley was a resident of Winnipeg and went to Weyburn on July 3 to act as supervising architect for Mr. John Atchison, of Winnipeg.

* * *

Mr. F. P. Jones, general manager of the Canada Cement Co., is making a tour of the company's properties in Western Canada. Announcement is made that the Canada Cement Company will build a new plant in Winnipeg, having a capacity of 1,200,000 barrels and that operations thereon will be commenced immediately.

* * *

Among the new Toronto incorporations are the Union Brick Co., Ltd., capitalized at $350,000; the Toronto Concrete Building Co., Ltd., capitalized at $40,000, and the Interprovincial Concrete Construction Co., Ltd., capitalized at $40,000.

* * *

The Montreal Builders' Exchange have decided to postpone their excursion until the winter, owing to the inability of members to get away. The secretary, however, is arranging an unofficial excursion on August 30th for any who desire to get away for a few days.

* * *

The Modern Painting Co., of Winnipeg, has changed its name to The Modern Construction & Investment Co., Limited.

* * *

The Clarke, Bell & Hall Construction Company, of Brandon, will apply for a change of name to the Clarke Construction Company, Limited.

* * *

Messrs. C. W. Sharpe & Son, the well known Winnipeg contractors, have removed their offices from the Sylvester-Willson block to 231 Garry street.

* * *

Announcement is made that the city of Moose Jaw will call for competitive plans for a city hall to cost $250,000. The aggregate value of the prizes is $3,000.

* * *

The Peninsula Construction Co., Ltd., (head office, St. Catharines, Ont.), has been incorporated with a capital of $400,000 to carry on a general contracting business.

* * *

A new Montreal firm is Builders & Contractors, Limited, capitalized at $100,000. The incorporators named are Messrs. F. G. Bush, G. R. Drennan and W. R. Shanks, all of Montreal.

The Canadian Builder

A Practical Paper Devoted to all Branches of the Building Trades

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Advertising rates on application.

Vol. 2 TORONTO, AUGUST, 1912 No. 8

Standard Sizes in Manufactured Lumber

On every hand builders speak of the delay in getting delivery of manufactured lumber, while planing mill proprietors tell of the difficulty they have in overtaking orders. This congestion at the height of the building season is to some extent inevitable in Canada with its climatic conditions making the period available for ordinary outside work much shorter than in many countries, and its rapid development taxing the capacity of its workers to the utmost limit. Nevertheless the fact remains that something could be done to prevent the congestion referred to. By the standardizing of manufactured lumber for instance.

Take windows and doors. The adoption of standard dimensions in these for use in the average small dwelling house would be a distinct help to builder and planing mill alike. As it is at present, with each architect or builder using slightly varying dimeniosns in each new dwelling or group of dwellings erected, the planing mill is kept at the straining point during the building season turning out doors and windows to specification sizes, and the builder is always in a fever of anxiety lest his work should be unduly hindered. Remember we are now dealing with moderate sized houses, the erection of which chiefly occupies the energy of the average builder.

Public buildings, commercial and industrial structures, and more extensive and expensive residences, come under a different category, as they are constructed necessarily to elaborate plans and specifications, infinitely varied according to conditions, individual taste and cost. Even in connection with these, however, work could be executed with less friction and greater expedition if general standards were in vogue that architects could conform to in preparing designs. In confirmation of this we need simply to refer to the large planing mills carrying stock lines and issuing catalogues. They get all the business they can handle because of the increased facility given by their steady output of standard listed lines which can be used by architects and builders and embodied in their plans.

The adoption of recognized standard dimensions in manufactured lumber would mean much to builders and planing mills in smaller towns. For the latter it would satisfactorily solve the problem of work during the winter, keeping men and machinery busy right along on the preparation of material for which there would be a certain sale in the Spring, and leaving ample scope for specification and jobbing work.

This is a live topic for the Builders' Exchange. Why should not some exchange experiment in its own district and try the idea out in practice? Other localities would soon follow suit and the idea might be worked on a national scale.

The importance of this matter is obvious to all who are engaged in the building trade. It is discussed with our outside representatives almost daily. We shall be glad to hear from some of our readers on the subject.

Necessity for Quality in Building

"The strength of a chain is as the strength of its weakest link." This is true also of the chain of builders across Canada. If a builder fails to use good material, whether concrete, lumber, brick, etc., the whole trade is condemned for the action of one.

Some owners of houses have called the attention of the editors to some poor work, including materials and workmanship. The houses investigated showed cracks in brickwork, patched up window molding, badly fitted and patched up window frames, bad lumber in baseboards, warped doors, etc. Complaints have also been made on account of contractors not carrying out their part of a bargain, such as not plastering up brick foundations, etc.

In order that the high reputation of the trade may be maintained, it is necessary for each builder to watch the details of the building and eliminate all these defects. In most cases it is the little things that count—that make a reputation. It may cost more to put up a well-built, well finished building, but the builder should educate the buyer to the fact that he gets what he pays for. The following is a striking example that the man who wants a cheap building will not get the most economical one:—

Two men put up similar houses. One accepted the lowest tender of $4,000, and the other paid $4,360 for his house. At a casual glance, the houses appear to be the same, but at the end of four years, the latter found that $100 covered his repair bill, while the former spent $600.

What a builder should sell is service. It is done in other lines of work. A company in Toronto sells furnace grate bars. They will not let a set be installed except under the supervision of the company's engineers. The reason is this, that each set of grates properly installed gives "service," is a good advertisement and leads to new customers, while a set improperly installed means complaints and the loss of future orders. The lesson is obvious and it is to be hoped that no builder in Canada will be a weak link in the chain, but that each will preserve a high reputation in the building trade.

Mr. Thomas Mawson, the famous English landscape architect, is at work on plans for the remodelling of Stanley Park, Vancouver, and the provision of breathing spaces and other facilities for open-air enjoyment. Mr. Mawson's scheme has special bearing on the rapid expansion of the city of Vancouver, expected after the opening of the Panama Canal. He intends that the scheme shall affect the form and character of the enormous growth of the city anticipated by its citizens. The example of Vancouver in this important matter is worthy of emulation by all our progressive and rapidly growing Canadian cities.

Brick Work, Concrete Work and Masonry

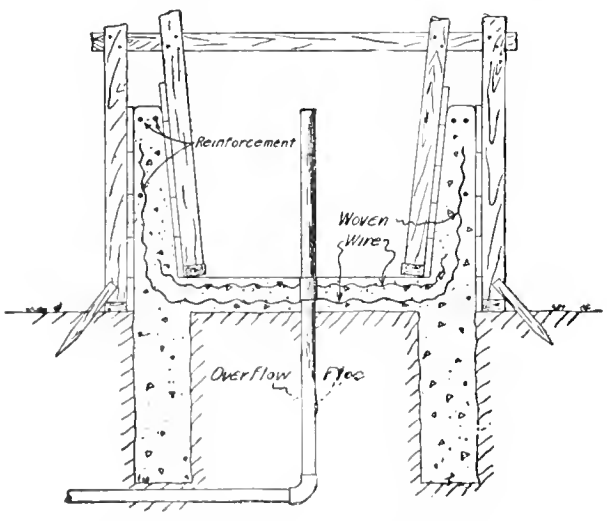
Method of Waterproofing Concrete

A method of treating concrete proposed in a report submitted to the National Association of Cement Users is the following: on flat surfaces lay a base of concrete at least two inches thick, and plaster while still wet with ½-in. of neat cement, trowelled hard; follow with another layer of finishing concrete not less than three inches thick. On wall surfaces, as soon as the timbering has been removed, thoroughly wet the surface, trowel on ½-in. of cement, and follow with a 1-in. coat of 1:2 cement mortar before the neat cement has begun to set appreciably. If the surfaces treated in either way are of large areas, the materials applied should be reinforced to obviate cracking.

An interesting test was made during the extension of the Buchanan factory at Glasgow, Scotland, where the Hennibique system of ferro-concrete has been adopted. On June 5th last a bay of the second floor, measuring 17 ft. 9 in. by 4 ft. 6 in., was tested under the superload of 3 cwt. 3 qr. per square foot, with the result that the maximum deflection of 1/4437 of the span was recorded. On removal of the loading no trace of permanent deformation existed.

Plans and Specifications for Concrete Watering Trough

In many sections of the country, more particularly in the rural districts, watering troughs or tanks are necessary adjuncts of the well equipped farm or ranch, and some suggestions as to how these may be conveniently constructed are likely to prove interesting to



Vertical cross section through the trough or tank.

many readers of this journal. Concrete is used for the purpose, and the tank or trough may be of any size or shape desired. For purposes of illustration we will explain the plan to be followed, taking for the subject a watering trough having a capacity of 30 barrels of 31½ gallons each. To build such an oblong tank, mark out on the ground a space 5 x 14 ft. Within these lines dig a foundation trench 10 in. wide and 2½ ft. deep around the entire trough or tank as some might term it. Lay the in-flow and over-flow pipes—not less than 1½ in. in diameter—so that the ends, fitted for connections, will be even with the bottom of the tank.

In doing the work it is well to construct "forms" and have all materials on hand before the actual digging of the foundation trench. For the forms use 1 in. siding on 2 x 4 in. uprights, spaced 2 ft. apart. The outside form is a bottomless box 5 ft. wide by 14 ft. long, inside measurements. It should be constructed 3 ft. high to provide for a 6 in. floor and a clear depth of 2½ ft. According to the Association of American Portland Cement Manufacturers, to whom we are indebted for the accompanying illustrations, the inside form must be narrower and shorter to make provision for walls 5 inches thick at the top and flaring to a thickness of 8 inches at the bottom of the tank. When ice forms, this slope allows it to slip up the tank walls instead of pushing directly against them. The sides and ends of the forms may be made separate and put together in place; or, if there is sufficient help, each form may be entirely completed and set up as one piece. The forms are held in position by 2 x 4-in. liners at top and bottom and, if necessary, by sloping braces nailed to stakes driven in the ground. Cut strips of heavy woven wire fencing long enough to cover the bottom of the tank crosswise and to project up into the walls to within 6 in. of the top, and likewise a strip 4 ft. longer than the inside length of the tank.

With the forms ready, mix the concrete 1 part Portland cement to 2 parts sand to 4 parts crushed rock. In measuring the materials, count 1 bag of cement equal to 1 cu. ft. If bank-run gravel is used, mix the concrete 1 part cement to 4 parts gravel. Fill the foundation trench with concrete. Set the outside form in place. See that it is level, so that the tank will be level and can be entirely filled with water. Lay the 6 in. bottom reinforced 1½ in. from the under side with the short lengths of woven wire crosswise and 1½ in. from the upper side with the long strip of fencing. Bring up the extra length of wire so that the ends will project up into the future side-walls and can be fastened to the reinforcing rods. (This wire reinforcing in the bottom will prevent possible cracking due to heaving by frost.)

With the bottom finished, immediately set the inside form in place and fill the wall space with concrete mushy wet. Half-way up the side, and 1 in. from the outside, lay a ⅜-in. rod (or several hooked together) entirely around the tank. Again 2 in. from the top and 1 in. from both inside and outside, imbed two more ⅜-in. rods in the concrete. Round the top edges of the tank with a trowel or a sidewalk tool. If a tank cover is desired, insert ½-in. bolts, head down, in the soft concrete with sufficient length above the top of the wall to pass through the wooden cover and to receive a nut and washer.

When the tank is three days old, remove the inner to pass through the wooden cover and to receive a form and paint the inside of the tank with a mixture of cement and water as thick as cream. Screw into the over-flow pipe connection the necessary length of over-flow pipe. The tank may be used in ten days

provided the outside form is left in place. If the outer form is removed at the same time as the inner, do not use the tank for two weeks.

Bill of Materials.

Crushed rock, 6½ cu. yds. at $1.10	$ 7.15
Sand, 3¼ cu. yds. at $1.00	3.25
Portland cement, 10½ barrels, at $2.50	26.25
12 rods, ⅜-in. x 10-ft., 45 lbs., at .02¼	1.00
Total	$37.65

By getting prices from local dealers, the cost may be found to be less. Such a tank is the cheapest to be had, since it never needs repairs and never wears out.

Brick Veneered Houses: Methods of Construction

By I. P. Hicks

The brick-veneered house has its share of advantages as well as those of other forms of construction.

A brick house has a more substantial and imposing appearance than the ordinary frame house, and is more desirable from this point of view. But the brick house with solid brick walls has its objections. All the outside walls must be furred to make a desirable job. It will not do to plaster directly on an outside brick wall. In all such cases the brick wall will absorb moisture to such an extent that the plaster will remain damp and discolor for several feet above the first floor, and in some cases will even drop off. To fur a brick wall so that it can be lathed and plastered is quite a bit of labor. We think a brick veneered house is a very good substitute for a solid brick wall house, and is well worth the consideration of all who want a brick house in appearance and warmth, with the advantages of a dry house that the frame construction gives.

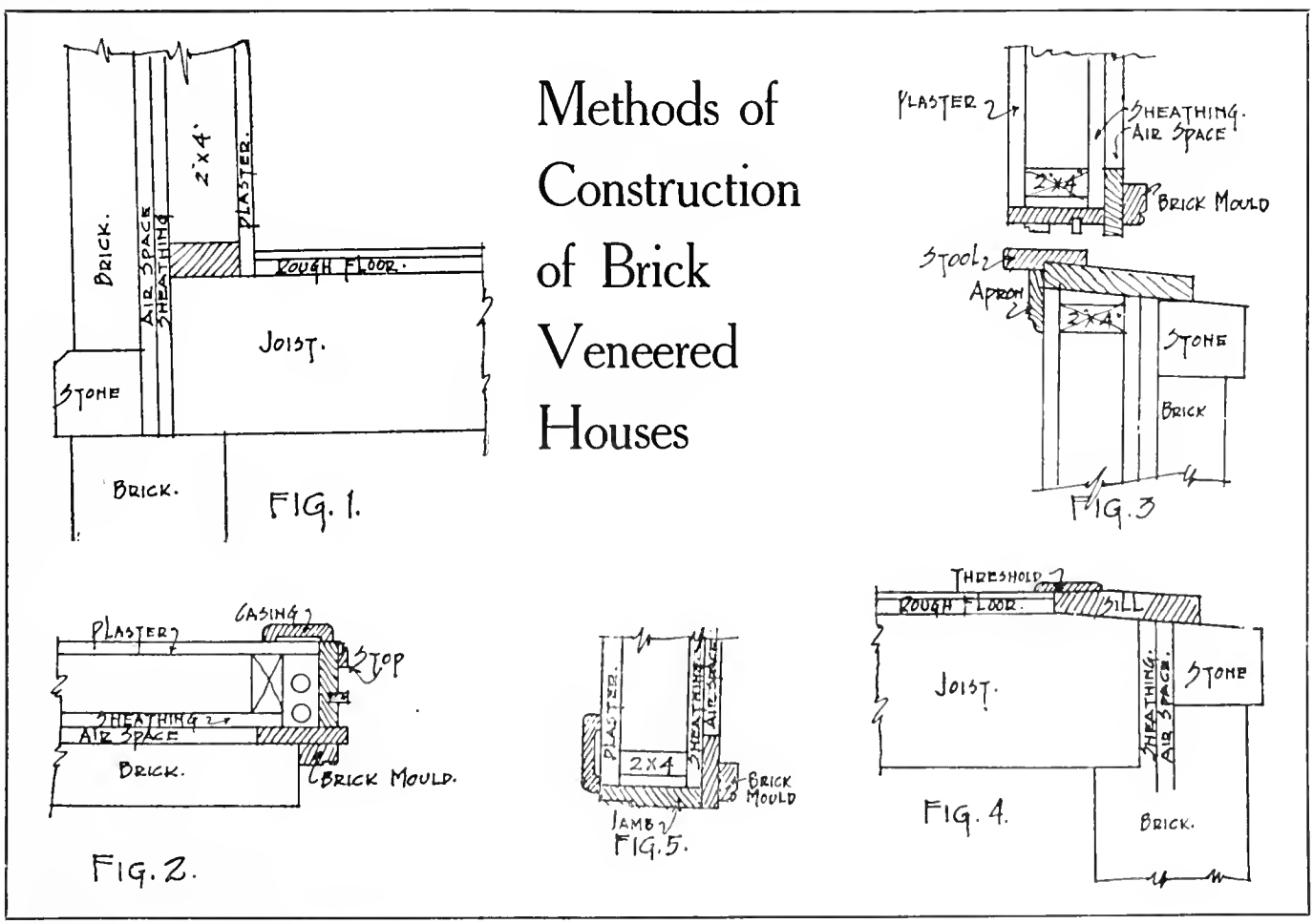
Anybody interested in brick veneered houses would naturally have more or less interest in the proper method of constructing them, and with this in view we have drawn up several details of construction showing the proper method of building a brick veneered house.

Figure 1 represents the outside wall of a brick veneered house. The ordinary residence needs only what is called an eight-inch solid brick wall from the bottom of cellar up to the first floor joists, as shown. We recommend that this wall have a concrete footing at least 6 inches thick and four inches wider each side than the wall above. There is nothing that makes as good a footing as concrete.

The first floor joists can rest directly on the foundation wall, then put a plate on top of the joists, and start the frame superstructure from this. The frame should be sheathed with common sheathing of the standard thickness. Between this and the brick veneering leave an inch air space. It is also a good plan to cover this sheathing with one layer of No. 2 tarred felt before laying the brick. As a matter of ornamentation a base course of stone should be run around at the bottom of the joist line as shown.

The brick veneering should be anchored to the frame by using crimped galvanized metal wall ties, one to every brick in every seventh course. The ties are nailed to the frame work and the crimped part extends out into the mortar joints.

Figure 2 represents the construction of a window



frame by showing a vertical section of the same. The frame is much the same as is used in ordinary frame construction, except that where the ordinary frame has a blind stop about 1½ inches wide, the frame for the brick veneer has a casing 4½ to 5 inches wide, and it is this that forms the air space. Instead of an outside casing, the frame has a brick mold, as will be seen by sketch.

Figure 3 represents a section through a window at the sill and also at the head, and shows all the parts in the construction in a very plain manner, so that it can be readily understood from the drawings without any further description.

Figure 4 represents a section of a door frame at the sill line and floor line. Figure 5 represents the side and head sections, and will be readily understood by referring to the sketches.

As the matter of cost of construction is always a very important consideration, it will be interesting to compare the cost of construction of a solid brick wall, a veneered wall, and an all-wood construction, to see which has the advantage in first cost. We will take a 100 square feet surface measure of each wall for example, ready for the plaster, and obtain a close approximate cost of each.

First take a solid 8-inch brick wall, faced with a fairly good face brick; the cost would be about as follows:

750 common brick laid in wall	$ 9.00
750 face brick laid in wall	15.00
Furring	1.00
Total	$25.00

Second, take the brick veneered:

100 square feet of outside wall, framed, raised and sheathed.....	$ 7.00
750 face brick laid in wall	18.00
Total	$25.00

Cost of all wood construction, which includes siding but not painting, would be $11. Thus, it will be seen that all wood construction is much the cheapest. There is not much difference in the solid brick 8-inch wall and the brick veneered wall. For veneering a frame building, we have to figure the laying of the face brick much higher on account of building scaffolds and the extra time required to lay brick in this manner. But an 8-inch wall would not do for a two-story house, and when we substitute a 12-inch solid wall for the 8-inch wall, then the cost of 100 square feet of brick wall would figure up to $33, and the cost is then much in favor of the brick veneered house.

When constructing a house of brick, be sure and select a brick that will wear well, one that will not go to pieces with age, or lose its beauty. A brick wall should be of a quality that will never need paint to cover up its defects. No painted brick wall looks good to us, and a good brick will save all trouble about exterior painting for all time to come. When we consider the dry and warm construction of the brick veneered house, we have much to commend it to the people who prefer brick construction to that of the all frame. The National Builder.

Every man has a right to kick every time he wants to, just so he doesn't kick somebody else. When he does, he should remember that the other fellow has rights, too.

Finding Levels for Cellar Excavations and Foundation Walls

By A. S. F.

For the benefit of the readers of the paper I am enclosing sketches showing the method I have used in finding the levels for cellar excavations and the top of foundation walls. To those of us who cannot afford the expensive transit and level this method is simple and the instrument—the ordinary carpenters' level with leveling sights attached—is inexpensive.

An examination of the sketches will show how to arrange the corner stake and batter board. The stake is placed at the corner where the ground is the highest. The top of the stake will be the height of the foundation wall. Two stakes are then driven as shown and a board nailed to them at the same level as the corner stake. Care must be taken that all points be perfectly level.

For the target use a piece of 2 x 3-in. stuff 8 ft. long and tack to it a piece of white cardboard about 6 in.

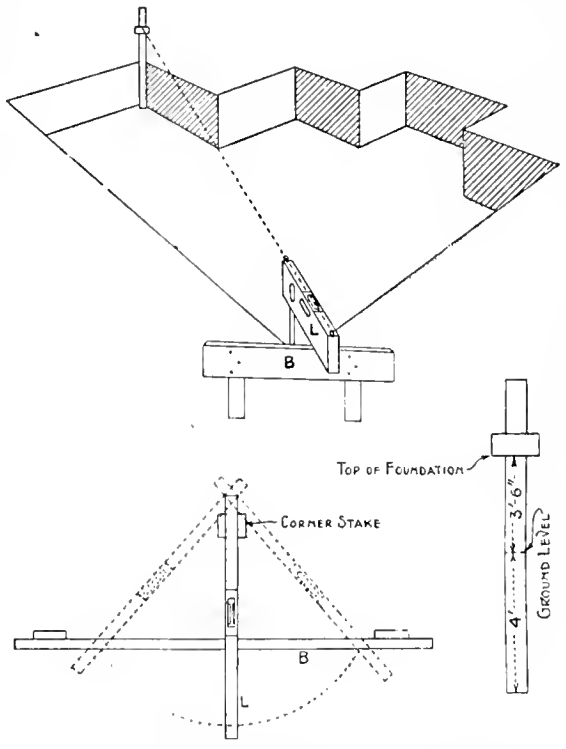


Fig. 1. Finding levels for cellar excavations and for foundation walls.

long and the same width as the level. Have the bottom of the cardboard the height of the foundation wall.

For finding the depth of the excavation proceed as follows: Suppose the wall is to be 7 ft. 6 in. and is to extend 3 ft. 6 in. above the ground at the highest point. Tack the cardboard on the rod so that the bottom edge will be 7 ft. 6 in. from the bottom of the rod. Now have your assistant hold the target at each angle as staked out on the ground and with a piece of cardboard move it up or down until the top of it is on a line with the sights. The difference between it and the bottom of the stationary cardboard will be the depth of the excavation at that point. The depth of all the other angles can be found in the same manner.

This method is quicker and simpler and more accurate than using a straight edge and level.—Building Age.

Carpentry and Woodworking

Fast Door Hanging

By Fred Eberle, Toronto

First, measure door, see if it is right one for frame, then measure width and height, to see how much wans trimming off. Then dress door so you have joint about thickness of a cent; then place door in trussel ready for hinges. Next get a rod, cut half-inch less than height of frame. Mark on door where hinges are to be; lay out rod the same, keeping top end of rod flush with top rail of door. Then drive fine nail in top end of rod, projecting thickness of cent. Take rod mark jamb, keeping top end of rod hard up at head of frame. Your rod is ready for all doors on the job, providing all are somewhere near height. Never drop a tool till it has finished its work. This style of hanging a door will save muscle and trouble.

How to Sharpen a Gouge

Place the gouge on the bench with the back up and the cutting edge extending about 3 in. over the edge of the table. Apply the whetstone with the right hand while holding the gouge level with the left; rub the stone back and forth at right angles to the gouge and at the same time roll it around the curve of the gouge. This method will take out nicks when using a coarse stone and also keep the cutting edge straight, which is difficult to do on a grindstone. A few strokes of a fine stone in the usual way will produce a good edge.

Quality of Hardwood Flooring

In any consideration of the question of hardwood flooring, especially when oak is the material, the point of quality must not be overlooked, for quality in flooring depends to a very considerable extent upon quality in manufacture; that is, on the expert knowledge of handling and matching, which comes only through study and experience at the work. It is generally conceded that almost any man can take good oak and make out of it with a flooring machine and a dry kiln a serviceable flooring, but to obtain the highest quality in appearance and in service necessitates special equipment and expert attention from the time it enters the mill.

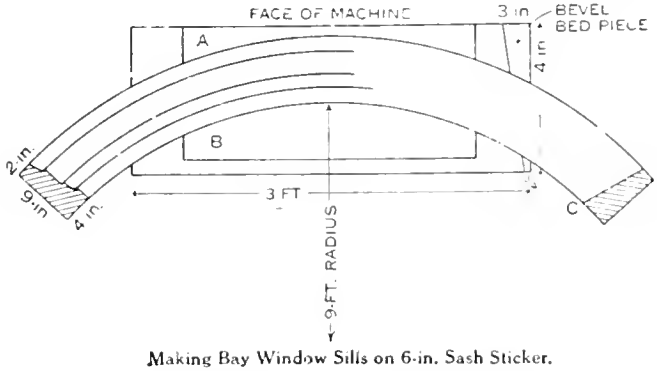
In the first place, it must be so thoroughly dried that there is not a vestige of moisture left in it. On its face this appears simple because it is only a matter of applying heat, but in reality it is anything but simple for the very fact that in obtaining the thorough dryness required it must be done without in any way injuring the structure or body of the wood. If it is carelessly dried there is apt to develop what is known as checks or "honeycomb" in the wood until it is neither beautiful nor serviceable after being finished. Therefore, the drying must not only be thorough but great pains and care must be exercised in doing the work.

After the drying has been completed the same painstaking care must be exercised in ripping, preparing and matching the lumber. It is not only a matter of finishing the face and getting it uniform in thickness and width but it must be neatly and carefully matched, so that the joints will not only be smooth but the tongue and groove must fit together snugly so as to give strength at the joints and where the end matching comes. Manufacturers who are experienced in this work are very careful in their measuring and in adjusting their machines, frequently resorting to microscopic measurements so that the flooring will be of uniform width and thickness and will properly match.—Building Age.

How a Difficult Job was Accomplished

By Norton M. Denegar in "Wood-Worker"

Several bay window sills were to be made, 4 x 9-in., on a 9-ft. radius. I accomplished this task in the following manner: I made a bevel bedpiece, 3-in. thick, beveled down to ¾-in. on the other edge, so as to give it the required pitch, placed it on the bed and fastened it there. I sawed out two pieces on the same radius as sill, both inside and outside, as A and B in the sketch, and nailed them fast to the bevel bedpiece, then put on the straight knives and took off all surplus wood, thereby beveling still and bringing face



Making Bay Window Sills on 6-in. Sash Sticker.

of the sill in line with the feed rolls and chipbreaker, and also to lessen the cut, as by so doing it made the cut lighter.

This work was done on a small sash sticker with a 6-in. head. After cutting as far as I could with this head, I reversed the bedpiece and finished the work, running the inside of the circle to the face of the machine. As there was only 3-in. left to finish on the sills, I was able to reach it very easily from the inside of the circle.

I have also made 5-in. crown molding and bed molding in the same way, when they have been on a true circle, saving very much time by doing it in this manner, as it is finished in one cut. I saw off the corners on the band saw, thereby allowing the feed rollers to run on the flat surface.

How The Finish Counts

The manager of a sash and door jobbing house was down in the shipping room, with a pleased smile on his face, watching the unloading of some cars of fresh stock, including windows, columns and caps. "Did

you ever see a finer looking lot of stuff than that?" was his greeting. Examination of the stock showed it to be of the same material commonly used. The only distinctive feature about it was that the work was very neatly and cleanly finished, not poorly and coarsely sanded, as is much of stock sash. This man said he had shopped around carefully till he found a concern that would take pains finishing the stock, and that while he had to wait a little longer to get it, it was well worth while. He made a feature of quality in seeking trade, and when his customers got this stock they were so well pleased that they told him so. Surely here is a pointer worth while to the maker of stock sash and doors, and to the planing mill man, too. The only feature adding quality to this stock was the finish. It was made of the same material as most other stock, but pains were taken with the finish. And it most certainly brought returns that amounted to more than the difference in cost between finishing carefully and finishing carelessly.—Wood Worker.

The Double Claw Hammer

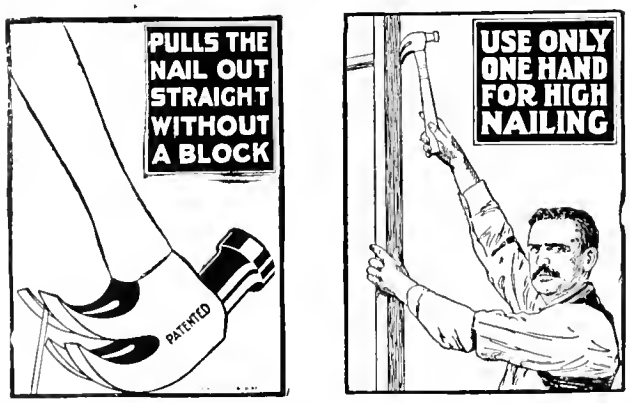
The utility of the double claw hammer shown in the accompanying illustration will be so apparent to carpenters and builders that it is scarcely necessary to enumerate its advantages. To a salesman one carpenter said:—"Don't explain it—I see what it is, and it's a mighty good thing, too."

But to be explicit, the advantages claimed for the hammer are as follows, and the reader can judge for himself:

(1) Pulls the nail out straight.

(2) Relieves the strain on your arm when doing scaffolding siding and ceiling work.

(3) You hold on with your left hand while pulling with your right. This gives you more power, and the



nail is not rolled into a fish-hook as with the old hammer.

(4) You can drive the same nail right in again.

(5) For finishing work this hammer is a great aid, as ten to fifteen per cent. of all the finishing nails start wrong and must be withdrawn.

(6) The centre of gravity, as you drive with the double claw hammer, lies exactly between the two claws. Thus it has a more powerful drive than if too much of the weight were at the extreme end.

(7) For high nailing you can bind the nail slightly in the first claw with the head all the way in.

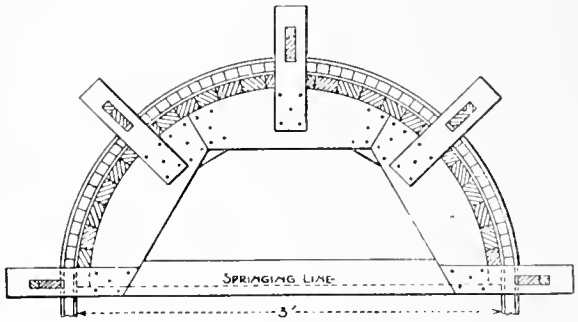
The originators of this hammer, The Double Claw Hammer Co., 153 Broadway, Brooklyn, New York, were told by hammer makers that the double claw hammer could not be made. They had, therefore, to build their own factory and experiment until they found a way to make it successfully; and they found that the hammer had to be made in two pieces and welded together, and that it cost three times as much to make it as the ordinary hammer. This double claw hammer is sold for $1.50.

Bending Material for Circular Work

By T. H.

I am sending herewith a sketch illustrating a method for bending materials for circular sash frame heads, rails in circular framing or for base boards where saw kerfing would not be admissible. It is possible that the scheme which I shall describe may be of interest to a number of the readers of the paper.

It consists of an ordinary drum or center of the required width for the work in hand, with cleats mortised for the folding wedges nailed on each side. The material as here shown is placed next to the drum and then a veneer of 7/8-in. or any other thickness required



Bending materials for circular work.

is saw kerfed on the inside, and when both are well heated and the glue spread on they are placed together between the cleats with the center of the material on the center of the drum. The center folding wedges are put in first and then those next on each side, as shown in the sketch.

This way of bending material gives two faces, and if for panel work it can be plowed in the straight before kerfing. If for a sash frame it makes a strong head, particularly where the frames are built in as the building is put up.

Stop beads for circular head sash frames can be gotten out by taking a plank of the length required and the same thickness as the width of the stop bead. Joint one edge of the plank, then saw off a strip one-third the thickness of the finished bead. Again joint the edge and take off another one-third, then joint the edge of the plank again, run a fine plane over the sawed sides of the other two strips and pin them to the jointed edge of the plank by means of small wooden pegs, keeping them all the same way of the grain. By previously marking across the face of the plank stick the bead or molding, as the case may be; then saw it off at another one-third, making 1/2 in. or 5/8 in. as required.—Building Age.

Measuring Interiors for Mill Work

By John Wavrek, Jr.

There are undoubtedly many systems, for each man who measures up the mill work will have a method which differs in some degree from that of another man; but from my experience of the work I have come to the conclusion that the one which is described herein is the most satisfactory—to me at least.

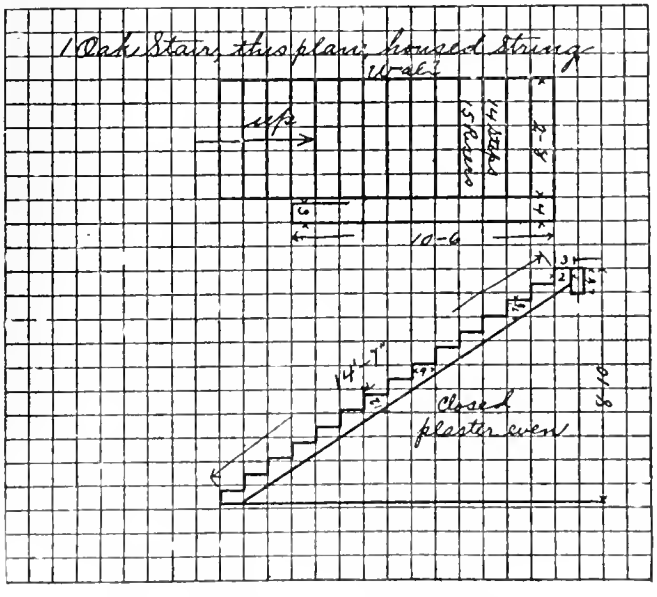
In the first place, the man who takes measurements

at buildings, it is needless to say, should be thoroughly familiar with every branch and detail of the planing mill; should be a practical mechanic who has had much experience, besides having ideas of his own. Often he will be called upon to make suggestions to people who are building or making alterations, and it would be greatly to his discredit if he were not able to supply them.

The method which I wish to lay out is the result of years of experience and may well be employed by any man who is doing the same kind of work. I have no doubt there are features about it which will not be approved by some, but I trust I shall always be willing and broad-minded enough to learn, and would certainly be much pleased to have suggestions made which will improve on our system.

For an example, we will assume that we are to measure up the interior of an ordinary house three stories in height. To be thoroughly familar with the job which we are to work on, it is essential that we read up the specifications thoroughly, also study the plan well. Of course, in most cases there are some changes made either in the plans or the specifications, which should be noted in the estimate or contract sheet. This latter sheet should also be taken along to the job and note taken to see that there are no extras put to the job without being noted on the slips containing the measurements.

A very handy book to use to take data is one which has loose leaves that can be removed upon having completed the measurements, and placed on file. The



Measurement for an ordinary flight of stairs

sheets are in size about 5 by 7 inches, and section ruled. This ruling I find very convenient in making sketches, and especially in taking data for staircases. We will use a 1-foot rule as the most convenient for our purpose, besides a handy steel tape, for the stair work.

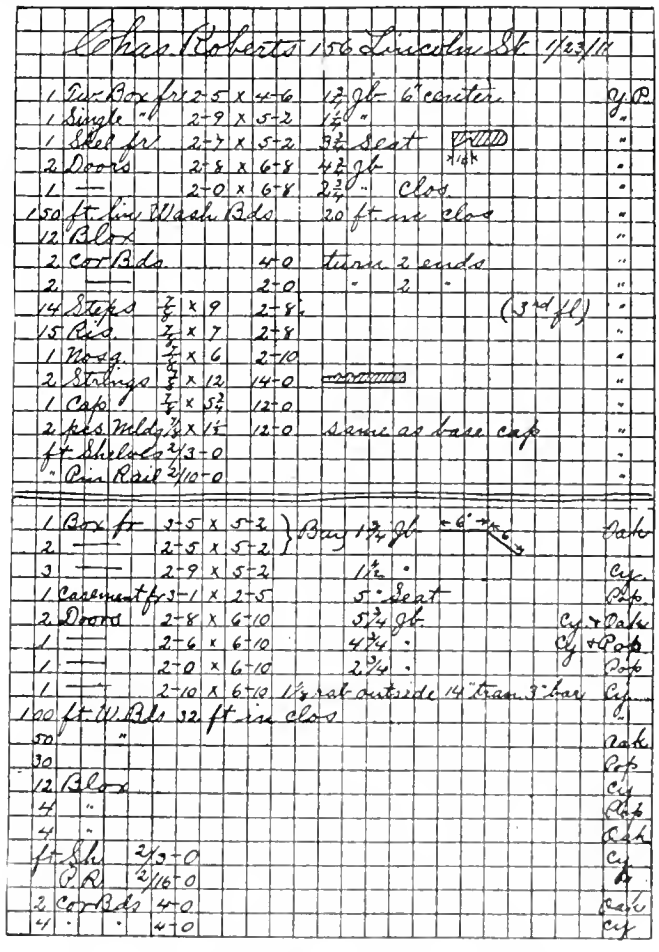
First, then I go to the uppermost floor, which is the third in this instance, and start by taking the measurements of all the windows first. The handiest and quickest method is to take the sash sizes. Having this, and knowing the construction of the frames, we have a very good basis to work on. There would be one twin box frame, 2 ft. 5 in. by 4 ft. 6 in., $1\frac{3}{4}$-in. jamb, 6-in. centre; one box frame, 2 ft. 9 in. by 5 ft. 2 in., $1\frac{1}{4}$-in. jamb; one skeleton window frame, 2 ft. 7 in. by 5 ft. 2 in., $3\frac{3}{4}$-in. seat.

After having taken all the windows, proceed by taking the door sizes next. There may be an opening of 2 ft. 10 in. by 6 ft. 10 in.

When taking the size of closet doors be careful to make note of the fact, for in most cases closet doors are only $1\frac{1}{8}$ in. thick, while the others will probably be $1\frac{3}{8}$ in. Also, very often the trim in a closet is different on the inside in cases where there is a cabinet head finish on the outside. Also measure the openings for switch-box doors, which are usually made the inside size of the box. After having taken the doors, proceed to measure up the baseboards or base, taking the closets separate, because in most cases they are different.

Base Blocks, Corner Beads, Etc.

Next are the base blocks, if any are needed, which is not always the case. Then corner beads, stating how



Facsimile of one of the pages in Book of Measurements

long, for some corners will not allow of a regular 4-ft. stock head being used. Sometimes it happens that a corner is not at right angles, which must therefore be stated and the correct angle noted.

In most cases there is a plaster railing inclosing the staircase on the top floor. If this wall is 4 in. thick, then furnish a cap of $5\frac{3}{4}$ in. wide, nosed on both edges, calculating a piece of molding the same kind as the base cap on each side of and under this nosed cap. These moldings should mitre into the base cap. Now measure the closets for shelving and pin rails.

Having taken all the data on this floor, take the steps and risers, nosing and strings for the stairs, which are usually the box kind; also the wall rail. This would bring us to the second floor, with which we

proceed in the same manner. It very often happens that this floor has different kinds of wood in the different rooms, the front room being oak or chestnut, the bedroom cypress or pine, and the bathroom and toilet poplar. It is best to mark on the plans the various kinds of finish to be used in the different rooms, so that there is not so much chance to make a mistake, for a door which is to be made up of two different kinds of wood is expensive, as it has to be veneered and cannot very well be kept in stock. These are exceptional cases and should be measured up carefully.

On this floor there may also be a bay window, in which case take note of the width of space between the frames at the angles, for in many cases the regular trim is not wide enough, and a special trim must be made for these angles. If a seat is to be put in this bay window, correct measurement must be taken of all the angles, length and depth, so that the seat will fit when sent to the job.

It is often the case that a door leads onto a rear porch from this floor. Note must be made of this fact, because the door will only need trim on one side; also a threshold will be wanted. If this door has a transom above, take size of same, also width of bar, so that the trim on the inside will be made long enough. In the bath room there will very likely be a medicine closet; take the rough opening size of this, also the depth.

The first floor is usually the hardest to measure up, for very often there is a colonade which members into the staircase, and must therefore be measured very exact. Then there may be a panelled wainscot in the dining room, in which case the utmost care must be taken to get the figures just right, or there will be "something doing" when the panelling does not fit. A corner bay window is also one of the nightmares which often occurs on this floor. If this should have a single base or box seat then your troubles are more complicated. However, be sure what you are about and go ahead.

In the kitchen there is a dresser, which sometimes has to fit into a certain space between the trim of two floors; this must be measured very correctly; also the height of the story taken. The range-place trim and doors must not be forgotten.

The staircase, which is by no means the easiest part of the job, I usually reserve for the last. This necessitates the making of sketches in order to take down right so that the stair man may readily understand what is meant. Here it is very appropriate to impress the fact that whoever the man that takes the data he should be able to make a tolerably good sketch, both instrumental and free-hand, for often it is required of him to sketch the outlines of some ornamental work which has many curved lines and moldings and which must be duplicated exactly.

Expert Man Required.

It is therefore evident that you cannot pick out a man at random from the mill employees and send him out to get data. Also, there is very great responsibility connected with the work which is not always appreciated by the mill owner. If you have the right man it is to your interest to pay him well; his path is not strewn with roses, for if anything goes wrong the man who takes the measurement is blamed first.

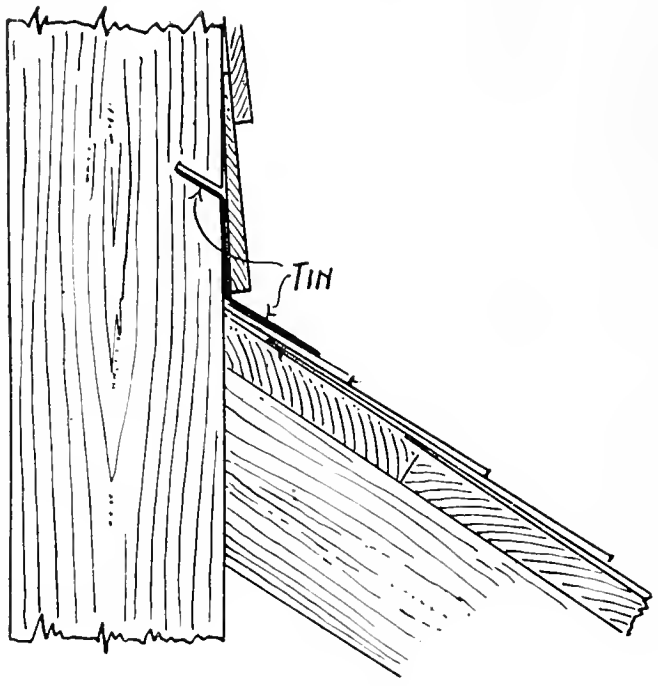
The data should be explicit in every respect, so that the man who writes out the cutting list for the mill may understand it thoroughly without asking a lot of questions. It often happens that the measuring man will be out for several days in succession, and if the data is not explicit it will cause great delay in writing out the cutting list.

Accompanying the specimen pages of the method which I employ. It would please me to hear from others on this subject.—The Wood-Worker.

To Stop That Leak

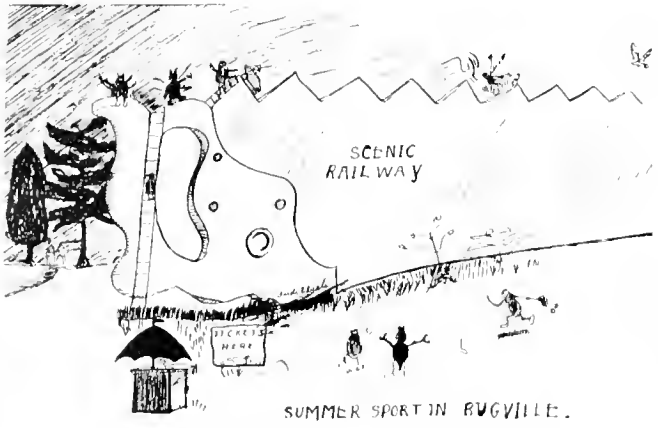
In a recent issue of the American Carpenter and Builder, J. E. Cross gives information on how to stop a leak. He says: "I will undertake to give a way of handling such problems. It never fails for me in making a tight job over a bay window or any other similar break in a wall.

"Let the tin flashing go behind the storm sheathing; take off if necessary, a few of the boards by cut-



Stopping a leak in the roof.

ting off at the studding back on each side of the leak and then replace after the flashing is put in, being careful to lead it outside at the bottom where it begins. Where there is only lap siding, I cut a short slanting kerf in the studs to catch the water, running down same and insert the upper edge of the tin in same as shown."



Summer sport on a carpenter's saw.

Price List of Building Materials—Revised to Date

	PRICE AT TORONTO	PRICE AT WINNIPEG	PRICE AT VANCOUVER
Hemlock Lumber			
2 x 4 in. to 2 x 12 in., 8 to 14 ft.	$22.00		
2 x 4 in. to 2 x 12 in., 16 ft.	23.00		
2 x 4 in. to 2 x 12 in., 18 ft.	26.00		
1 in. Hemlock No. 1	20.00 to 23.00		
No. 1 hemlock decking	23.00		
No. 2 hemlock dimension and 1 in.	16.00 to 18.00		
Pine			
1 in. common pine, 8 to 12 in. wide, rough	$27.00 to 30.00		
2 in. white pine, bill stock	29.00 to 33.00		
⅞ x 8 and 10 in. pine shelving	36.00 to 40.00		
⅞ x 12 pine shelving	45.00		
No. 1 white pine flooring	32.00		
No. 1 spruce flooring	26.00		
No. 1 pine decking, D2S	30.00		
Spruce pine decking	25.00		
No. 1 pine V. or beaded sheeting	35.00		
No. 2 pine V. or beaded sheeting	31.00		
Pine Trim for Paint Finish			
4 in. casing, per 100 ft.	$2.00		
5 in. casing, per 100 ft.	2.25		
8 in. pine base, per 100 ft.	3.25		
10 in. pine base, per 100 ft.	4.25		
4 in. pine window stool, per 100 ft.	2.75		
Shingles, Lath Roofing, Etc.			
XXX B. C. cedar shingles	$3.60 per M	$4.00 per M	$2.10 per M
N. B. Extras	3.50		
N. B. Clears	2.90		
No. 1 pine lath	4.75 per M	5.75 per M	2.75 per M
No. 2 pine lath	4.25		
No. 1 spruce lath	4.00		
Metal lath		.15 to .19	
Roofing Felt (2 ply)		2.50 per roll	
Cedar Posts—Fence			
5 in. at small end	$.25 each		
7 in. at small end	.35 each		
Hardware			
Nails, wire, common	$2.30 cwt.	$3.70 per keg	$3.25 per keg
Nails, cut, common	2.75	3.70	4.25
Sash weights, cast iron	1.65		
Tarred felt paper	1.65	.90 per roll	.62½ per roll
Building paper		.75	.70
Insulating paper		1.25	
Brick, Tile, Terra Cotta, Sewer Pipe, Etc.			
No. 1 dry pressed red brick	$18.00 per M	$25.00 to 50.00	$45.00 per M
No. 1 dry pressed buff bricks	18.00	25.00 to 50.00	45.00
Red stock bricks	12.00	13.00	13.50
Grey stock bricks	11.00		
Wire cut bricks for foundation work	11.00		
Porous terra cotta bricks	15.00		
No. 1 enamelled bricks, all colors, from	80.00 to 150.00	100.00	
Fire brick		45.00	45.00
Roofing tile		.15 per ft.	
Sewer pipe, 4-inch		.08½ per ft.	.15 per ft.
Sewer pipe, 6-inch		.16½ per ft.	
Cement, Plaster, Stone, Etc.			
Cement (bags extra)	$1.90 bag	$2.50 per bbl.	$3.25 per bbl.
Sand, for cement or brick work	1.15 a yard	1.75 a yard	
Lime	.38 cwt.	.32 per bu.	1.35 per bbl.
Hydrated lime		12.00 per ton	4.25 per bbl.
Mortar color		.05 per lb.	
Plaster of paris	3.10 bbl.	4.00 per bbl.	
Crushed stone, 2 in.	1.30	2.75 per yard	
Crushed stone, 1 in.	1.35	2.75	
Crushed stone, ⅜ in.	1.45	2.75	
Hardwall plaster		12.50 per ton	15.00 per ton
Gravel		1.85 per yard	
Hair (plaster)		1.25 per bale	15.00 per ton

NOTE TO READERS. We would be glad to have suggestions from readers as to the extension or modification of this list.

CLASSIFIED DIRECTORY—A BUYER'S GUIDE FOR BUILDERS IN CANADA

Alabastine.
Alabastine Co., Paris, Ont.

Automatic Gas-Steam Boilers.
Consumers' Gas Co., Toronto.

Bath Tubs.
Standard Ideal Co., Port Hope, Ont.

Beaded Sheets.
Metal Shingle & Siding Co., Preston, Ont.

Burial Vault Molds.
Ideal Concrete Machinery Co., London, Ont.

Closets.
Standard Ideal Co., Port Hope, Ont.

Ceilings, Metal.
Metal Shingle & Siding Co., Preston, Ont.

Ceilings and Walls, Embossed Steel.
Galt Art Metal Co., Galt, Ont.

Colors for Concrete.
Ideal Concrete Machinery Co., London, Ont.

Concrete Block Machines.
Ideal Concrete Machinery Co., London, Ont.
Wettlaufer Bros., Toronto.

Concrete Brick Machine.
Ideal Concrete Machinery Co., London, Ont.
Wettlaufer Bros., Toronto.

Concrete Sill, Lintel and Dimension Stone Machines.
Ideal Concrete Machinery Co., London, Ont.

Concrete Mixers.
Ideal Concrete Machinery Co., London, Ont.
Wettlaufer Bros., Toronto.

Concrete Tile Machines.
Wettlaufer Bros., Toronto.

Concrete Reinforcements.
Metal Shingle & Siding Co., Preston, Ont.

Cornices, Galvanized or Copper.
Galt Art Metal Co., Galt, Ont.

Corrugated Sheets.
Galt Art Metal Co., Galt, Ont.
Metal Shingle & Siding Co., Preston, Ont.

Crestings.
Metal Shingle & Siding Co., Preston, Ont.

Curb Stone Machines.
Ideal Concrete Machinery Co., London, Ont.

Cutouts.
Duncan Electrical Co., Montreal.

Daylight Rods.
Consolidated Plate Glass Co., Toronto.

Derricks.
Ideal Concrete Machinery Co., London, Ont.

Doors.
L. A. DeLaplante, Limited, Toronto.
Georgian Bay Shook Mills, Limited, Midland, Ont.

Door Trimmings.
Metal Shingle & Siding Co., Preston, Ont.

Drinking Fountains.
Standard Ideal Co., Port Hope, Ont.

Eavestrough.
Metal Shingle & Siding Co., Preston, Ont.

Eave-Trough and Conductor-Pipe.
Galt Art Metal Co., Galt, Ont.
Metal Shingle & Siding Co., Preston, Ont.

Electrical Specialties.
Duncan Electrical Co., Montreal.

Expanded Metal.
Galt Art Metal Co., Galt, Ont.

Fences.
George B. Meadows, Toronto.

Finials.
Galt Art Metal Co., Galt, Ont.
Metal Shingle & Siding Co., Preston, Ont.

Fire Escapes.
George B. Meadows, Toronto.

Fireproof Windows.
Galt Art Metal Co., Galt, Ont.
Metal Shingle & Siding Co., Preston, Ont.

Flooring, Hardwood.
Georgian Bay Shook Mills, Midland, Ont.

Floor Scrapers.
Hurley Machine Co., Limited, Toronto.

Forge and Rivet Heaters.
Consumers' Gas Co., Toronto.

Galvanized Chain Pumps.
Metal Shingle & Siding Co., Preston, Ont.

Galvanized Iron Cornices.
Metal Shingle & Siding Co., Preston, Ont.

Galvanized Tanks.
Metal Shingle & Siding Co., Preston, Ont.

Gas Blow Pipes.
Consumers' Gas Co., Toronto.

Gas Engines.
Consumers' Gas Co., Toronto.

Gas Furnaces.
Consumers' Gas Co., Toronto.

Gas Lighting Appliances.
Consumers' Gas Co., Toronto.

Gas Fixtures.
Consumers' Gas Co., Toronto.

Gas Piping.
Consumers' Gas Co., Toronto.

Gas Ranges.
Consumers' Gas Co., Toronto.

Gas Water Heaters.
Consumers' Gas Co., Toronto.

Gates.
George B. Meadows, Toronto.

Glass.
Consolidated Plate Glass Co., Toronto.

Glue Pot Heaters.
Consumers' Gas Co., Toronto.

Herringbone Lath.
Metal Shingle & Siding Co., Preston, Ont.

Hoists.
Wettlaufer Bros., Toronto.

Incinerators.
Standard Ideal Co., Port Hope, Ont.

Interior House Finish.
L. A. DeLaplante, Limited, Toronto.
Georgian Bay Shook Mills, Midland, Ont.

Lath.
Galt Art Metal Co., Galt, Ont.

Laundry Tubs.
Standard Ideal Co., Port Hope, Ont.

Metal Roofing and Siding.
Galt Art Metal Co., Galt, Ont.

Mortar Gauges.
Ideal Concrete Machinery Co., London, Ont.

Mouldings.
L. A. DeLaplante, Limited, Toronto.
Georgian Bay Shook Mills, Limited, Midland, Ont.

Ornamental Iron Work.
George B. Meadows, Toronto.

Ornamental Molds.
Ideal Concrete Machinery Co., London, Ont.

Plaster.
Alabastine Co., Limited, Toronto.

Plaster Corner Bead.
Metal Shingle & Siding Co., Preston, Ont.

Plaster Paris.
Alabastine Co., Paris, Ont.

Plumbing Goods.
Standard Ideal Co., Limited, Port Hope.

Pulpstone.
Alabastine Co., Paris, Ont.

Pumps.
Wettlaufer Bros., Toronto.

Railings.
George B. Meadows, Toronto.

Receptacles (Electrical).
Duncan Electrical Co., Montreal.

Ridge, Galvanized.
Metal Shingle & Siding Co., Preston, Ont.

Ridgings.
Metal Shingle & Siding Co., Preston, Ont.

Roofing.
Metal Shingle & Siding Co., Preston, Ont.
Patterson Mfg. Co., Limited, Toronto.

Roofing, Steel.
Galt Art Metal Co., Galt, Ont.

Sash.
L. A. DeLaplante, Limited, Toronto.
Georgian Bay Shook Mills, Limited, Midland, Ont.

Seats, Implement.
Galt Art Metal Co., Galt, Ont.

Sewer Pipe Molds.
Ideal Concrete Machinery Co., London, Ont.

CLASSIFIED DIRECTORY—*Continued*

Sockets, Brass and Porcelain.
Duncan Electrical Co., Montreal.

Soil Pipe.
Standard Ideal Co., Port Hope, Ont.

Soil Pipe Fittings.
Standard Ideal Co., Port Hope, Ont.

Soldering Iron Heaters.
Consumers' Gas Co., Toronto.

Shingles, Galvanized Steel.
Galt Art Metal Co., Galt, Ont.

Shingles, Metal.
Metal Shingle & Siding Co., Preston, Ont.

Shooks.
Georgian Bay Shook Mills, Midland, Ont.

Skylights.
Galt Art Metal Co., Galt, Ont.
Metal Shingle & Siding Co., Preston, Ont.

Sidewalk Prisms.
Consolidated Plate Glass Co., Toronto.

Siding, Steel.
Galt Art Metal Co., Galt, Ont.

Sill and Cap Molds.
Ideal Concrete Machinery Co., London, Ont.

Sinks (Kitchen and Wash).
Standard Ideal Co., Port Hope, Ont.

Spanish Roofing Tile Machines.
Ideal Concrete Machinery Co., London, Ont.

Stairs, Iron.
George B. Meadows, Toronto

Stanchions.
Metal Shingle & Siding Co., Preston, Ont.

Steel Buildings and Garages.
Metal Shingle & Siding Co., Preston, Ont.

Steel Ceilings and Walls.
Galt Art Metal Co., Galt, Ont.

Store Front Bars.
Consolidated Plate Glass Co., Toronto.

Terra Cotta.
Toronto Plate Glass Importing Co., Toronto.

Thimbles.
Metal Shingle & Siding Co., Preston, Ont.

Urinals.
Standard Ideal Co., Port Hope, Ont.

Valley, Galvanized.
Metal Shingle & Siding Co., Preston, Ont.

"V" Crimp Roofing and Siding.
Metal Shingle & Siding Co., Preston, Ont.

Ventilators.
Galt Art Metal Co., Galt, Ont.
Metal Shingle & Siding Co., Preston, Ont.

Wall Plugs.
Ideal Concrete Machinery Co., London, Ont.

Wall Coating.
Alabastine Co., Paris, Ont.

Waterproofing.
Ideal Concrete Machinery Co., London, Ont.

Watering Bowls for Stock.
Metal Shingle & Siding Co., Preston, Ont.

Window Trimmings.
Metal Shingle & Siding Co., Preston, Ont.

Wire Work.
George B. Meadows, Toronto.

Woodworkers.
Elliot Woodworker Co., Toronto.

Index to Advertisements